

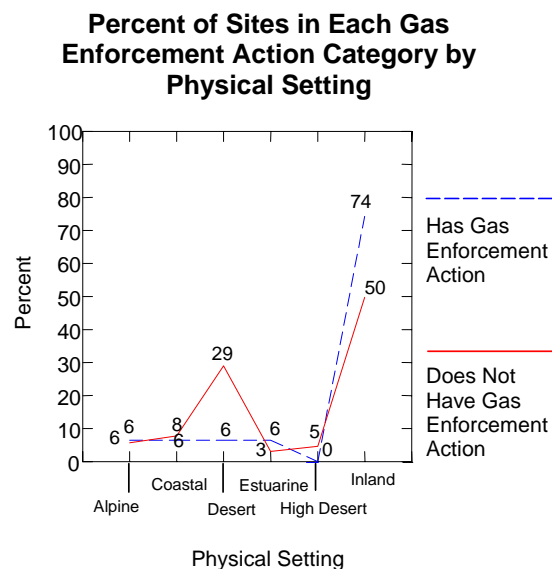
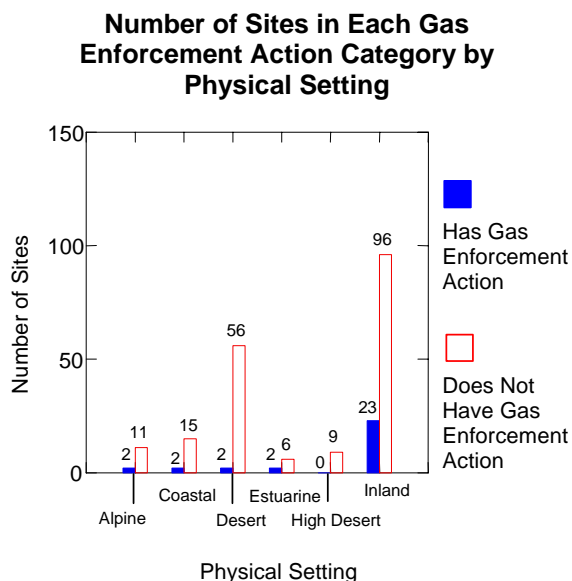
Appendix B-2

Assessment of Individual MSW Landfill Site Characteristics By Gas Enforcement Action Status

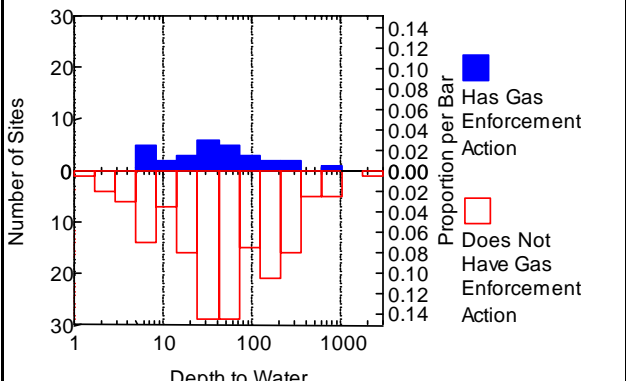
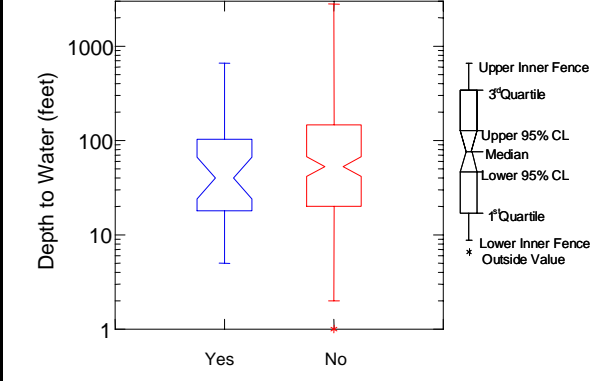
Results statements in this appendix are based on the study's Task 2 database inventory, which contains data on the 224 MSW landfills studied.

Site Characteristic (Independent Variable)	<div>Owner Type</div> <div>Value and Number of Landfills</div> <div>Public: 168</div> <div>Private: 56</div>																															
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: “Has Gas Enforcement Action” or “Does Not Have Gas Enforcement Action”)</div> <div>Summary Table Results—Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Independent Variable Reference Value</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Private</td><td>Public</td><td>0.317</td><td>1.522</td><td>3.464</td><td>0.668</td></tr></table> <div><div><div>Number of Sites in Each Gas Enforcement Action Category by Owner Type</div><table><thead><tr><th>Owner Type</th><th>Has Gas Enforcement Action</th><th>Does Not Have Gas Enforcement Action</th></tr></thead><tbody><tr><td>Private</td><td>10</td><td>46</td></tr><tr><td>Public</td><td>21</td><td>147</td></tr></tbody></table></div><div><div>Percent of Sites in Each Gas Enforcement Action Category by Owner Type</div><table><thead><tr><th>Owner Type</th><th>Has Gas Enforcement Action (%)</th><th>Does Not Have Gas Enforcement Action (%)</th></tr></thead><tbody><tr><td>Private</td><td>32</td><td>24</td></tr><tr><td>Public</td><td>76</td><td>68</td></tr></tbody></table></div></div>		Independent Variable Category	Independent Variable Reference Value	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Private	Public	0.317	1.522	3.464	0.668	Owner Type	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	Private	10	46	Public	21	147	Owner Type	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)	Private	32	24	Public	76	68
Independent Variable Category	Independent Variable Reference Value	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																											
Private	Public	0.317	1.522	3.464	0.668																											
Owner Type	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																														
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Owner Type	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)																														
Private	32	24																														
Public	76	68																														
Variable Type for Statistical Analysis	Categorical Independent Variable																															
Results Statement	Owner type does not increase or decrease the likelihood that a site is in the category “Has Gas Enforcement Action.”																															

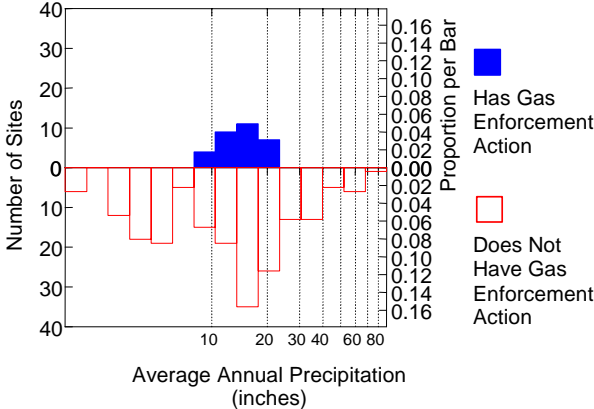
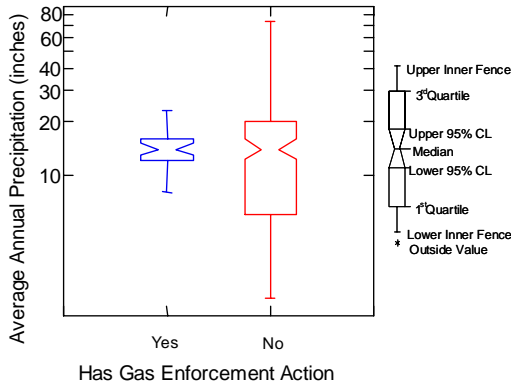
Site Characteristic (Independent Variable)	<div>Physical Setting</div> <div>Value and Number of Landfills</div> <div>Inland: 119 Desert: 58 Coastal: 17 Alpine: 13 High Desert: 9 Estuarine: 8</div>																																					
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Has Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>High Desert</td><td>Inland</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td></tr><tr><td>Desert</td><td>Inland</td><td>0.012</td><td>6.708</td><td>29.525</td><td>1.524</td></tr><tr><td>Alpine</td><td>Inland</td><td>0.731</td><td>1.318</td><td>6.358</td><td>0.273</td></tr><tr><td>Coastal</td><td>Inland</td><td>0.457</td><td>1.797</td><td>8.415</td><td>0.384</td></tr><tr><td>Estuarine</td><td>Inland</td><td>0.697</td><td>0.719</td><td>3.794</td><td>0.136</td></tr></table>		Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	High Desert	Inland	NA	NA	NA	NA	Desert	Inland	0.012	6.708	29.525	1.524	Alpine	Inland	0.731	1.318	6.358	0.273	Coastal	Inland	0.457	1.797	8.415	0.384	Estuarine	Inland	0.697	0.719	3.794	0.136
Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																																	
High Desert	Inland	NA	NA	NA	NA																																	
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	<div>Number of Sites in Each Gas Enforcement Action Category by Physical Setting</div>	<div>Percent of Sites in Each Gas Enforcement Action Category by Physical Setting</div>																																				
Variable Type for Statistical Analysis	Categorical Independent Variable																																					
Results Statement	It is approximately 6.7 times less likely that a desert site is in the category “Has Gas Enforcement Action” than an inland site. No other physical settings increase or decrease the likelihood that a site is in the category “Has Gas Enforcement Action”. Based on the available data, none of the high desert sites are in the category “Has Gas Enforcement Action.”																																					



Site Characteristic (Independent Variable)	<div>Social Setting</div> <div>Value and Number of Landfills</div> <div>Rural: 139</div> <div>Urban: 71</div> <div>Suburban: 14</div>																			
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Urban</td><td>Rural</td><td>0.026</td><td>2.405</td><td>5.208</td><td>1.111</td></tr><tr><td>Suburban</td><td>Rural</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td></tr></table>		Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Urban	Rural	0.026	2.405	5.208	1.111	Suburban	Rural	NA	NA	NA	NA
Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio															
Urban	Rural	0.026	2.405	5.208	1.111															
Suburban	Rural	NA	NA	NA	NA															
	<div>Number of Sites in Each Gas Enforcement Action Category by Social Setting</div>	<div>Percent of Sites in Each Gas Enforcement Action Category by Social Setting</div>																		
Variable Type for Statistical Analysis	Categorical Independent Variable																			
Results Statement	It is approximately 2.4 times more likely that an urban site is in the category “Has Gas Enforcement Action” than a rural site. None of the suburban sites are in the category “Has Gas Enforcement Action.”																			

Site Characteristic (Independent Variable)	Minimum Depth to Underlying Groundwater Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p style="text-align: center;">Summary Table of Results – Logistic Regression (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Minimum Depth to Underlying Groundwater</td><td>0.984</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p style="text-align: center;">Log-Scale Frequency Diagram of Depth to Water by Gas Enforcement Action Category</p>  </div> <div> <p style="text-align: center;">Box-and-Whisker Plot of Depth to Water by Gas Enforcement Action Category</p>  </div> </div>	Independent Variable Category	Probability	Minimum Depth to Underlying Groundwater	0.984
Independent Variable Category	Probability				
Minimum Depth to Underlying Groundwater	0.984				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is not a statistically significant difference in depth to water whether a site is in the category “Has Gas Enforcement Action” or “Does Not Have Gas Enforcement Action.”				

Site Characteristic (Independent Variable)	<h2>Underlying Geologic Material</h2> <p>Value and Number of Landfills</p> <p>Sand and/or Gravel: 95 Silts/Clays: 62 Sedimentary Rock: 51 Igneous Rock: 16</p>																																																							
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</p> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>Sand and/or Gravel</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td></tr><tr><td>Sedimentary Rock</td><td>Sand and/or Gravel</td><td>0.483</td><td>1.421</td><td>3.793</td><td>0.532</td></tr><tr><td>Silts/Clays</td><td>Sand and/or Gravel</td><td>0.182</td><td>1.833</td><td>4.462</td><td>0.753</td></tr></tbody></table> <div><div><p>Number of Sites in Each Gas Enforcement Action Category by Underlying Geologic Material</p><table><caption>Data for Number of Sites in Each Gas Enforcement Action Category by Underlying Geologic Material</caption><thead><tr><th>Underlying Geologic Material</th><th>Has Gas Enforcement Action</th><th>Does Not Have Gas Enforcement Action</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>0</td><td>16</td></tr><tr><td>Sand and/or Gravel</td><td>11</td><td>84</td></tr><tr><td>Sedimentary Rock</td><td>8</td><td>43</td></tr><tr><td>Silts/Clays</td><td>12</td><td>50</td></tr></tbody></table></div><div><p>Percent of Sites in Each Gas Enforcement Action Category by Underlying Geologic Material</p><table><caption>Data for Percent of Sites in Each Gas Enforcement Action Category by Underlying Geologic Material</caption><thead><tr><th>Underlying Geologic Material</th><th>Has Gas Enforcement Action (%)</th><th>Does Not Have Gas Enforcement Action (%)</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>0</td><td>8</td></tr><tr><td>Sand and/or Gravel</td><td>35</td><td>44</td></tr><tr><td>Sedimentary Rock</td><td>26</td><td>22</td></tr><tr><td>Silts/Clays</td><td>39</td><td>26</td></tr></tbody></table></div></div>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Igneous Rock	Sand and/or Gravel	NA	NA	NA	NA	Sedimentary Rock	Sand and/or Gravel	0.483	1.421	3.793	0.532	Silts/Clays	Sand and/or Gravel	0.182	1.833	4.462	0.753	Underlying Geologic Material	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	Igneous Rock	0	16	Sand and/or Gravel	11	84	Sedimentary Rock	8	43	Silts/Clays	12	50	Underlying Geologic Material	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)	Igneous Rock	0	8	Sand and/or Gravel	35	44	Sedimentary Rock	26	22	Silts/Clays	39	26
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																																																			
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Silts/Clays	39	26																																																						
Variable Type for Statistical Analysis	Categorical Independent Variable																																																							
Results Statement	The underlying geologic material does not increase or decrease the likelihood that a site is in the category “Has Gas Enforcement Action.” None of the igneous rock sites are in the category “Has Gas Enforcement Action.”																																																							

Site Characteristic (Independent Variable)	Average Annual Precipitation Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Average Annual Precipitation</td><td>0.384</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p style="text-align: center;">Log-Scale Frequency Diagram of Average Annual Precipitation by Enforcement Action Category</p>  </div> <div> <p style="text-align: center;">Box-and-Whisker Plot of Average Annual Precipitation by Enforcement Action Category</p>  </div> </div>	Independent Variable Category	Probability	Average Annual Precipitation	0.384
Independent Variable Category	Probability				
Average Annual Precipitation	0.384				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is not a statistically significant difference in average annual precipitation whether a site is in the category "Has Gas Enforcement Action" or "Does Not Have Gas Enforcement Action."				

Site Characteristic (Independent Variable)	<h2>Landfill Gas Collection System</h2> <p>Value and Number of Landfills</p> <p>Yes: 103 No: 121</p>																			
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</p> <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Yes (have landfill gas monitoring)</td><td>No (do not have landfill gas monitoring)</td><td>0.004</td><td>3.38</td><td>7.725</td><td>1.479</td></tr></table>		Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Yes (have landfill gas monitoring)	No (do not have landfill gas monitoring)	0.004	3.38	7.725	1.479						
Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio															
Yes (have landfill gas monitoring)	No (do not have landfill gas monitoring)	0.004	3.38	7.725	1.479															
	<p>Number of Sites in Each Gas Enforcement Action Category by Landfill Gas Collection System</p> <table><caption>Data for Number of Sites in Each Gas Enforcement Action Category by Landfill Gas Collection System</caption><thead><tr><th>Landfill Gas Collection System</th><th>Has Gas Enforcement Action</th><th>Does Not Have Gas Enforcement Action</th></tr></thead><tbody><tr><td>No</td><td>9</td><td>112</td></tr><tr><td>Yes</td><td>22</td><td>81</td></tr></tbody></table>	Landfill Gas Collection System	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	No	9	112	Yes	22	81	<p>Percent of Sites in Each Gas Enforcement Action Category by Landfill Gas Collection System</p> <table><caption>Data for Percent of Sites in Each Gas Enforcement Action Category by Landfill Gas Collection System</caption><thead><tr><th>Landfill Gas Collection System</th><th>Has Gas Enforcement Action (%)</th><th>Does Not Have Gas Enforcement Action (%)</th></tr></thead><tbody><tr><td>No</td><td>29</td><td>58</td></tr><tr><td>Yes</td><td>71</td><td>42</td></tr></tbody></table>	Landfill Gas Collection System	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)	No	29	58	Yes	71	42
Landfill Gas Collection System	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																		
No	9	112																		
Yes	22	81																		
Landfill Gas Collection System	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)																		
No	29	58																		
Yes	71	42																		
Variable Type for Statistical Analysis	Dichotomous Independent Variable																			
Results Statement	It is approximately 3.4 times more likely that sites with landfill gas collection systems are in the category “Has Gas Enforcement Action” than those that do not have landfill gas collection systems.																			

Site Characteristic (Independent Variable)	Landfill Size (Permitted Disposal Area) Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Permitted Disposal Area</td><td>0.199</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p>Log-Scale Frequency Diagram of Permitted Disposal Area By Gas Enforcement Action Category</p> </div> <div> <p>Box-and-Whisker Plot of Permitted Disposal Area by Gas Enforcement Area Category</p> </div> </div>	Independent Variable Category	Probability	Permitted Disposal Area	0.199
Independent Variable Category	Probability				
Permitted Disposal Area	0.199				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is no statistically significant difference between the permitted disposal area of landfills that are in the category “Has Gas Enforcement Action” and of those that are in the category “Does Not Have Gas Enforcement Action.”				

<div>Site Characteristic (Independent Variable)</div>	<div>Liner Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Subtitle-D* or Subtitle-D Alternative: 4</div> <div>Fully Lined, Partially non-Subtitle-D or non-Subtitle-D Alternative: 12</div> <div>Partially Unlined: 70</div> <div>Fully Unlined: 138</div> <div>*Also referred to as “Sub-D.”</div>																								
<div>Environmental Performance</div>	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Subtitle-D or Subtitle-D alternative</td><td>Fully Unlined</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td></tr><tr><td>Fully Lined, partially non-Subtitle-D or non-Subtitle-D alternative</td><td>Fully Unlined</td><td>0.109</td><td>3.205</td><td>13.34</td><td>0.77</td></tr><tr><td>Partially Unlined</td><td>Fully Unlined</td><td>0.017</td><td>2.67</td><td>5.994</td><td>1.19</td></tr></table> <div><div><div>Number of Sites in Each Gas Enforcement Action Category by Liner Type (Whole Site)</div></div><div><div>Percent of Sites in Each Gas Enforcement Action Category by Liner Type (Whole Site)</div></div></div>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Subtitle-D or Subtitle-D alternative	Fully Unlined	NA	NA	NA	NA	Fully Lined, partially non-Subtitle-D or non-Subtitle-D alternative	Fully Unlined	0.109	3.205	13.34	0.77	Partially Unlined	Fully Unlined	0.017	2.67	5.994	1.19
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																				
Completely Subtitle-D or Subtitle-D alternative	Fully Unlined	NA	NA	NA	NA																				
Fully Lined, partially non-Subtitle-D or non-Subtitle-D alternative	Fully Unlined	0.109	3.205	13.34	0.77																				
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<div>Variable Type for Statistical Analysis</div>	<div>Categorical Independent Variable</div>																								
<div>Results Statement</div>	<div>It is approximately 2.7 times more likely that a partially unlined site is in the category “Has Gas Enforcement Action” than a site that is fully unlined. No other liner category increases or decreases the likelihood that a site is in the category “Has Gas Enforcement Action” relative to fully unlined sites. Based on the available data, none of the completely Sub-D or Sub-D alternative sites are in the category “Has Gas Enforcement Action.”</div>																								

Site Characteristic (Independent Variable)	<div>Cover Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Covered: 48 Partially Uncovered: 30 Completely Uncovered: 146</div>																																				
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Covered</td><td>Fully Uncovered</td><td>0.0563</td><td>0.1375</td><td>1.055</td><td>0.0179</td></tr><tr><td>Partially Uncovered</td><td>Fully Uncovered</td><td>0.00092</td><td>4.63</td><td>11.465</td><td>1.871</td></tr></table> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Has Gas Enforcement Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Covered</td><td>Fully Uncovered</td><td>0.0563</td><td>7.273</td><td>55.804</td><td>0.948</td></tr><tr><td>Partially Uncovered</td><td>Fully Uncovered</td><td>0.00092</td><td>0.216</td><td>0.534</td><td>0.087</td></tr></table>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Covered	Fully Uncovered	0.0563	0.1375	1.055	0.0179	Partially Uncovered	Fully Uncovered	0.00092	4.63	11.465	1.871	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Covered	Fully Uncovered	0.0563	7.273	55.804	0.948	Partially Uncovered	Fully Uncovered	0.00092	0.216	0.534	0.087
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Completely Covered	Fully Uncovered	0.0563	7.273	55.804	0.948																																
Partially Uncovered	Fully Uncovered	0.00092	0.216	0.534	0.087																																

	<p>Number of Sites in Each Gas Enforcement Action Category by Cover Type (Whole Site)</p> <table border="1"> <caption>Number of Sites in Each Gas Enforcement Action Category by Cover Type (Whole Site)</caption> <thead> <tr> <th>Cover Type (Whole Site)</th> <th>Has Gas Enforcement Action</th> <th>Does Not Have Gas Enforcement Action</th> </tr> </thead> <tbody> <tr> <td>Completely Covered</td> <td>1</td> <td>47</td> </tr> <tr> <td>Completely Uncovered</td> <td>19</td> <td>127</td> </tr> <tr> <td>Partially Uncovered</td> <td>11</td> <td>19</td> </tr> </tbody> </table>	Cover Type (Whole Site)	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	Completely Covered	1	47	Completely Uncovered	19	127	Partially Uncovered	11	19	<p>Percent of Sites in Each Gas Enforcement Action Category by Cover Type (Whole Site)</p> <table border="1"> <caption>Percent of Sites in Each Gas Enforcement Action Category by Cover Type (Whole Site)</caption> <thead> <tr> <th>Cover Type (Whole Site)</th> <th>Has Gas Enforcement Action</th> <th>Does Not Have Gas Enforcement Action</th> </tr> </thead> <tbody> <tr> <td>Completely Covered</td> <td>3</td> <td>25</td> </tr> <tr> <td>Completely Uncovered</td> <td>61</td> <td>66</td> </tr> <tr> <td>Partially Uncovered</td> <td>35</td> <td>8</td> </tr> </tbody> </table>	Cover Type (Whole Site)	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	Completely Covered	3	25	Completely Uncovered	61	66	Partially Uncovered	35	8
Cover Type (Whole Site)	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																								
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Cover Type (Whole Site)	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																								
Completely Covered	3	25																								
Completely Uncovered	61	66																								
Partially Uncovered	35	8																								
Variable Type for Statistical Analysis	Categorical Independent Variable																									
Results Statement	<p>It is approximately 4.6 times more likely that a partially uncovered site is in the category “Has Gas Enforcement Action” than a fully uncovered site. At a 95 percent significance level, the cover type does not increase or decrease the likelihood that a site is in the category “Has Gas Enforcement Action.” Under a 90 percent significance level, the results indicate a completely covered site is approximately 7.3 times less likely than a completely uncovered site to be in the category “Has Gas Enforcement Action.”</p>																									

Site Characteristic (Independent Variable)	Landfill Age Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Landfill Age</td><td>0.963</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p>Log-Scale Frequency Diagram of Landfill Age By Gas Enforcement Action Category</p> </div> <div> <p>Box-and-Whisker Plot of Age of Site by Gas Enforcement Action Category</p> </div> </div>	Independent Variable Category	Probability	Landfill Age	0.963
Independent Variable Category	Probability				
Landfill Age	0.963				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is no statistically significant difference in age between landfills that are in the category “Has Gas Enforcement Action” and those in the category “Does Not Have Gas Enforcement Action.”				

Site Characteristic (Independent Variable)	<h1>Landfill Age (Construction Before/During 1984 or After 1984)</h1> <p>Value and Number of Landfills</p> <p>Construction Before/During 1984: 209 Construction After 1984: 15</p>																			
Environmental Performance	<p>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</p> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Construction date after 1984</td><td>Construction date before/during 1984</td><td>0.4183</td><td>.4262</td><td>3.362</td><td>0.054</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Construction date after 1984	Construction date before/during 1984	0.4183	.4262	3.362	0.054						
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio														
Construction date after 1984	Construction date before/during 1984	0.4183	.4262	3.362	0.054															
Environmental Performance	<p>Number of Sites in Each Gas Enforcement Action Category by Construction Period</p> <table><caption>Data for Number of Sites in Each Gas Enforcement Action Category by Construction Period</caption><thead><tr><th>Construction Period</th><th>Has Gas Enforcement Action</th><th>Does Not Have Gas Enforcement Action</th></tr></thead><tbody><tr><td>After 1984</td><td>1</td><td>14</td></tr><tr><td>Before/ During 1984</td><td>30</td><td>179</td></tr></tbody></table>	Construction Period	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	After 1984	1	14	Before/ During 1984	30	179	<p>Percent of Sites in Each Gas Enforcement Action Category by Construction Period</p> <table><caption>Data for Percent of Sites in Each Gas Enforcement Action Category by Construction Period</caption><thead><tr><th>Construction Period</th><th>Has Gas Enforcement Action (%)</th><th>Does Not Have Gas Enforcement Action (%)</th></tr></thead><tbody><tr><td>After 1984</td><td>6</td><td>94</td></tr><tr><td>Before/ During 1984</td><td>3</td><td>97</td></tr></tbody></table>	Construction Period	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)	After 1984	6	94	Before/ During 1984	3	97
	Construction Period	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																	
After 1984	1	14																		
Before/ During 1984	30	179																		
Construction Period	Has Gas Enforcement Action (%)	Does Not Have Gas Enforcement Action (%)																		
After 1984	6	94																		
Before/ During 1984	3	97																		
Variable Type for Statistical Analysis	Dichotomous Independent Variable																			
Results Statement	Whether a site was built before/during 1984 or after 1984 does not increase or decrease the likelihood that it is in the category “Has Gas Enforcement Action.”																			

Site Characteristic (Independent Variable)	<div>Landfill Age (20 Years or Less)</div> <div>Value and Number of Landfills</div> <div>Landfill age 20 years or less: 16</div> <div>Landfill age greater than 20 years: 208</div>													
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Age of site 20 years or less</td><td>Age of site greater than 20 years</td><td>0.3778</td><td>0.3956</td><td>3.106</td><td>0.0503</td></tr></tbody></table> <div><div><div>Number of Sites in Each Gas Enforcement Action Category by Landfill Age (20 Years or Less)</div></div><div><div>Percent of Sites in Each Gas Enforcement Action Category by Landfill Age (20 Years or Less)</div></div></div>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Age of site 20 years or less	Age of site greater than 20 years	0.3778	0.3956	3.106	0.0503
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio									
Age of site 20 years or less	Age of site greater than 20 years	0.3778	0.3956	3.106	0.0503									
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	Whether or not a site is in the age bracket of 20 years or less does not increase or decrease the likelihood of its being in the category “Has Gas Enforcement Action.”													

Site Characteristic (Independent Variable)	<div>Landfill Age (21–40 Years)</div> <div>Value and Number of Landfills</div> <div>Landfill age 21–40 years: 143</div> <div>Other: 81</div>													
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill Age 21–40 Years</td><td>Other</td><td>0.6265</td><td>1.222</td><td>2.741</td><td>0.545</td></tr></tbody></table> <div><div><div>Number of Sites in Each Gas Enforcement Action Category by Landfill Age (21–40 Years)</div></div><div><div>Percent of Sites in Each Gas Enforcement Action Category by Landfill Age (21–40 Years)</div></div></div>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill Age 21–40 Years	Other	0.6265	1.222	2.741	0.545
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio									
Landfill Age 21–40 Years	Other	0.6265	1.222	2.741	0.545									
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	Whether or not a site is between 21 and 40 years old does not increase or decrease the likelihood of its being in the category “Has Gas Enforcement Action.”													

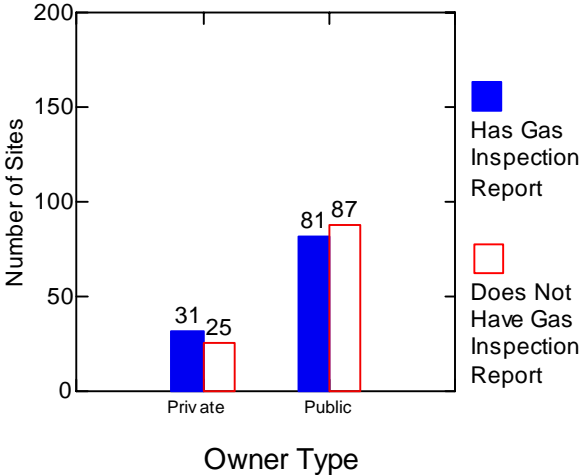
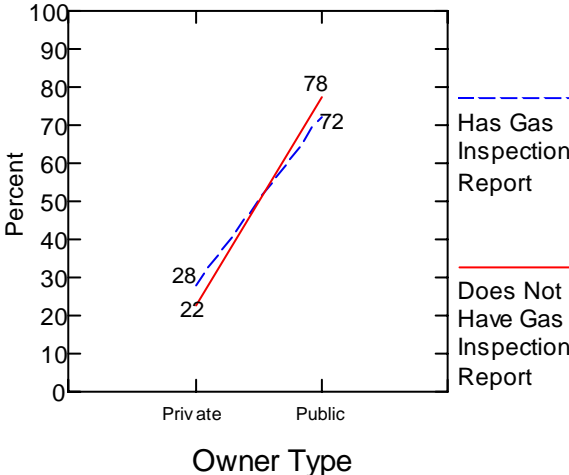
Site Characteristic (Independent Variable)	<div>Landfill Age (41–60 Years)</div> <div>Value and Number of Landfills</div> <div>Landfill Age 41–60 years: 50</div> <div>Other: 174</div>												
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill Age 41–60 years</td><td>Other</td><td>0.9702</td><td>1.017</td><td>2.522</td><td>0.411</td></tr></tbody></table> <div><div><div>Number of Sites in Each Gas Enforcement Action Category by Landfill Age (41–60 Years)</div></div><div><div>Percent of Sites in Each Gas Enforcement Action Category by Landfill Age (41–60 Years)</div></div></div>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill Age 41–60 years	Other	0.9702	1.017	2.522	0.411
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio								
Landfill Age 41–60 years	Other	0.9702	1.017	2.522	0.411								
Variable Type for Statistical Analysis	Dichotomous Independent Variable												
Results Statement	Whether or not a site is 41–60 years old does not increase or decrease the likelihood of its being in the category “Has Gas Enforcement Action.”												

Site Characteristic (Independent Variable)	<div>Landfill Age (Greater Than 60 Years)</div> <div>Value and Number of Landfills</div> <div>Landfill Age Greater Than 60 Years: 15</div> <div>Landfill Age 60 Years or Less: 209</div>																			
Environmental Performance	<div>Dependent Variable: Has Gas Enforcement Action (Binary Values: Has Gas Enforcement Action or Does Not Have Gas Enforcement Action)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Enforcement Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill Age Greater Than 60 Years</td><td>Landfill Age Less Than or Equal To 60 years</td><td>0.9532</td><td>0.9549</td><td>4.452</td><td>0.2048</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill Age Greater Than 60 Years	Landfill Age Less Than or Equal To 60 years	0.9532	0.9549	4.452	0.2048						
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio															
Landfill Age Greater Than 60 Years	Landfill Age Less Than or Equal To 60 years	0.9532	0.9549	4.452	0.2048															
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Landfill Age	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																		
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Landfill Age	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action																		
60 or Less	93	7																		
Over 60	7	93																		
Variable Type for Statistical Analysis	Dichotomous Independent Variable																			
Results Statement	Whether or not a site is over 60 years old does not increase or decrease the likelihood that of its being in the category “Has Gas Enforcement Action.”																			

Appendix B-3

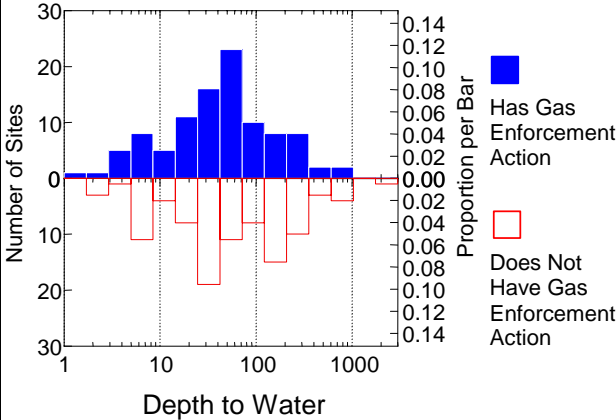
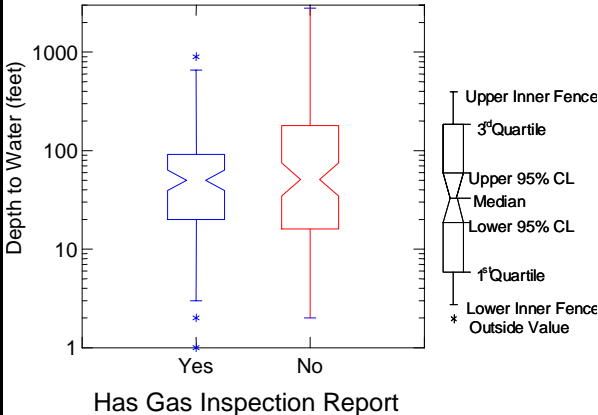
Assessment of Individual MSW Landfill Site Characteristics by Gas Inspection Report Status

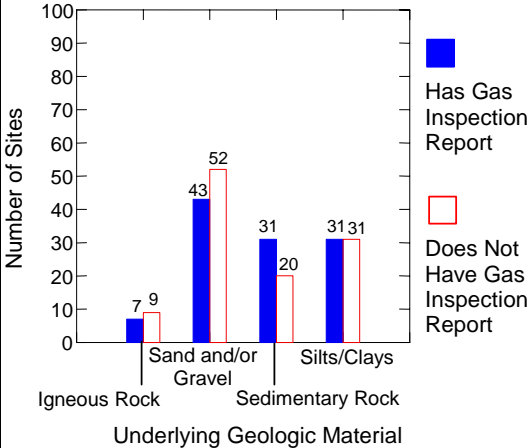
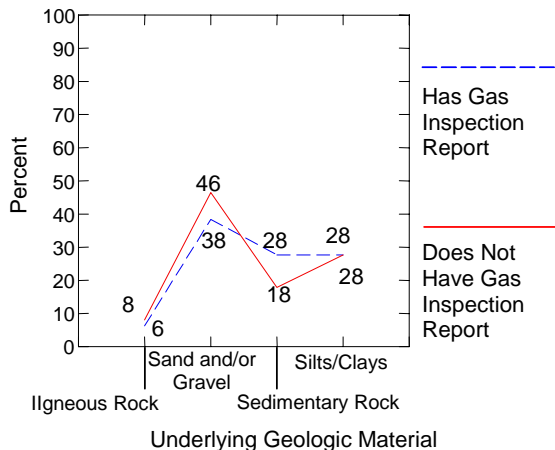
Results statements in this appendix are based on the study's Task 2 database inventory, which contains data on the 224 MSW landfills studied.

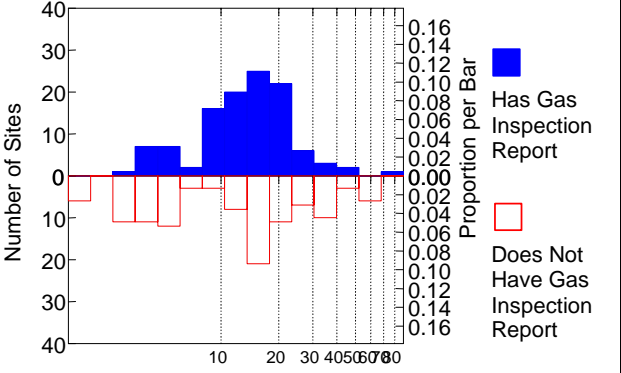
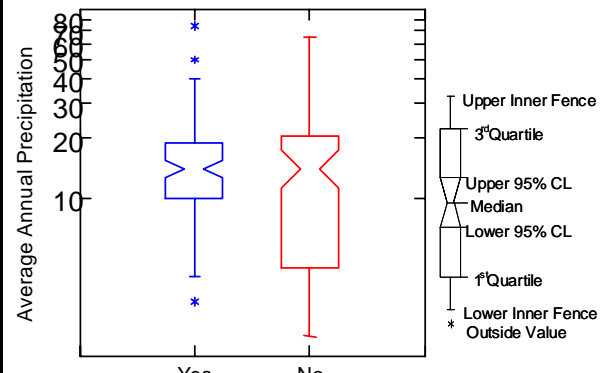
Site Characteristic (Independent Variable)	<div>Owner Type</div> <div>Value and Number of Landfills</div> <div>Public: 168</div> <div>Private: 56</div>																		
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Private</td><td>Public</td><td>0.355</td><td>1.33</td><td>2.445</td><td>0.725</td></tr></tbody></table>	Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Private	Public	0.355	1.33	2.445	0.725						
	Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio													
	Private	Public	0.355	1.33	2.445	0.725													
<div>Number of Sites in Each Gas Inspection Report Category by Owner Type</div>  <table><thead><tr><th>Owner Type</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>Private</td><td>31</td><td>25</td></tr><tr><td>Public</td><td>81</td><td>87</td></tr></tbody></table>	Owner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report	Private	31	25	Public	81	87	<div>Percent of Sites in Each Gas Inspection Report Category by Owner Type</div>  <table><thead><tr><th>Owner Type</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>Private</td><td>28</td><td>22</td></tr><tr><td>Public</td><td>78</td><td>72</td></tr></tbody></table>	Owner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report	Private	28	22	Public	78	72
Owner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report																	
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Owner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report																	
Private	28	22																	
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Variable Type for Statistical Analysis	Categorical Independent Variable																		
Results Statement	Owner type does not increase or decrease the likelihood of a site’s being in the category “Has Gas Inspection Report.”																		

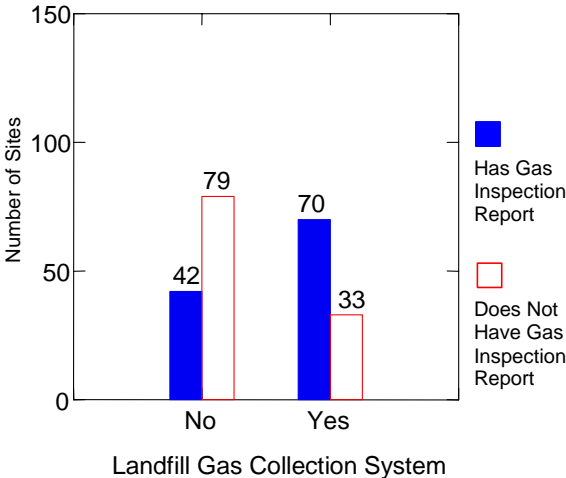
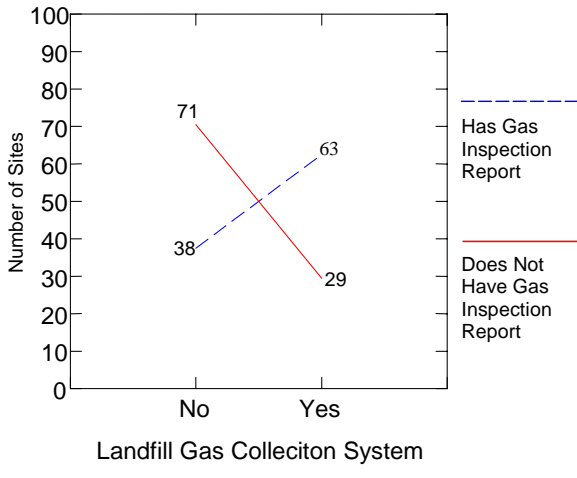
Site Characteristic (Independent Variable)	Physical Setting Value and Number of Landfills Inland: 119 Desert: 58 Coastal: 17 Alpine: 13 High Desert: 9 Estuarine: 8																																										
Environmental Performance	Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”) Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Has Gas Inspection Report”)																																										
	<table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>High Desert</td><td>Inland</td><td>0.926</td><td>1.067</td><td>4.173</td><td>0.273</td></tr><tr><td>Desert</td><td>Inland</td><td>0.010</td><td>2.349</td><td>4.486</td><td>1.230</td></tr><tr><td>Alpine</td><td>Inland</td><td>0.012</td><td>7.334</td><td>34.542</td><td>1.557</td></tr><tr><td>Coastal</td><td>Inland</td><td>0.896</td><td>0.933</td><td>2.619</td><td>0.333</td></tr><tr><td>Estuarine</td><td>Inland</td><td>0.333</td><td>0.444</td><td>2.293</td><td>0.086</td></tr></table>		Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	High Desert	Inland	0.926	1.067	4.173	0.273	Desert	Inland	0.010	2.349	4.486	1.230	Alpine	Inland	0.012	7.334	34.542	1.557	Coastal	Inland	0.896	0.933	2.619	0.333	Estuarine	Inland	0.333	0.444	2.293	0.086					
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Inland	61	46																																									
Variable Type for Statistical Analysis	Categorical Independent Variable																																										
Results Statement	It is approximately 2.3 times less likely that a desert site is in the category “Has Gas Inspection Report” than an inland site. It is approximately 7.3 times less likely that an alpine site is in the category “Has Gas Inspection Report” than an inland site. No other physical settings increase or decrease the likelihood that a site is in the category “Has Gas Inspection Report.”																																										

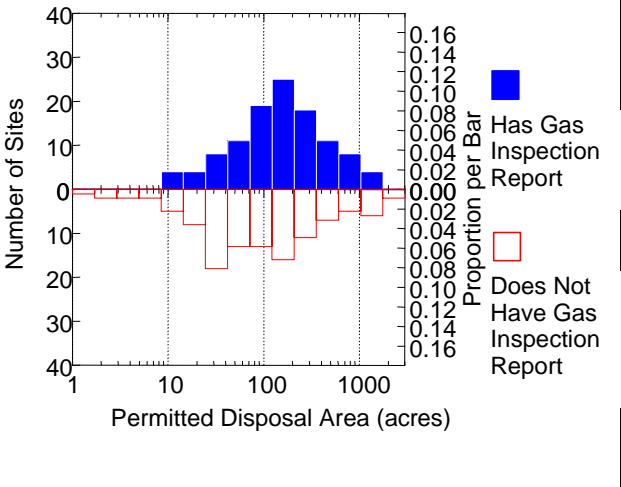
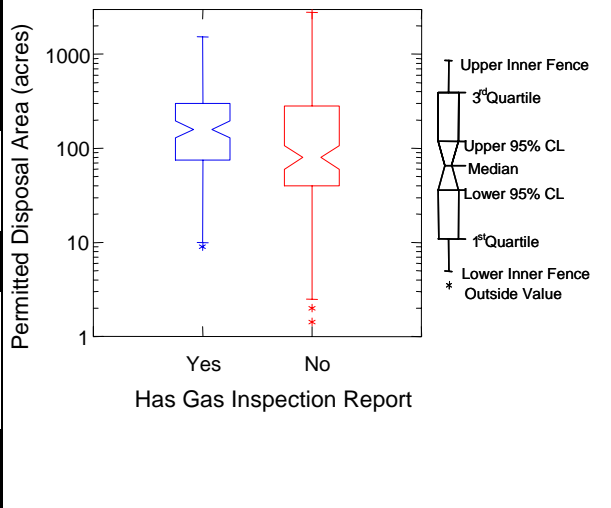
Site Characteristic (Independent Variable)	Social Setting Value and Number of Landfills Rural: 139 Urban: 71 Suburban: 14																																										
Environmental Performance	Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”) Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Inspection Report”) <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Urban</td><td>Rural</td><td>0.00017</td><td>3.20415</td><td>5.87354</td><td>1.74793</td></tr><tr><td>Suburban</td><td>Rural</td><td>0.89338</td><td>1.07895</td><td>3.2777</td><td>0.35517</td></tr></table> <div><div>Number of Sites in Each Gas Inspection Report Category by Social Setting<table><thead><tr><th>Social Setting</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>Rural</td><td>57</td><td>82</td></tr><tr><td>Suburban</td><td>6</td><td>8</td></tr><tr><td>Urban</td><td>49</td><td>22</td></tr></tbody></table></div><div>Percent of Sites in Each Gas Inspection Report Category by Social Setting<table><thead><tr><th>Social Setting</th><th>Has Gas Enforcement Action</th><th>Does Not Have Gas Enforcement Action</th></tr></thead><tbody><tr><td>Rural</td><td>51</td><td>73</td></tr><tr><td>Suburban</td><td>5</td><td>7</td></tr><tr><td>Urban</td><td>44</td><td>20</td></tr></tbody></table></div></div>	Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Urban	Rural	0.00017	3.20415	5.87354	1.74793	Suburban	Rural	0.89338	1.07895	3.2777	0.35517	Social Setting	Has Gas Inspection Report	Does Not Have Gas Inspection Report	Rural	57	82	Suburban	6	8	Urban	49	22	Social Setting	Has Gas Enforcement Action	Does Not Have Gas Enforcement Action	Rural	51	73	Suburban	5	7	Urban	44	20
Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																																						
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Urban	44	20																																									
Variable Type for Statistical Analysis	Categorical Independent Variable																																										
Results Statement	It is approximately 3.2 times more likely that an urban site is in the category “Has Gas Inspection Report” than a rural site. The suburban setting does not increase or decrease the likelihood that a site is in the category “Has Gas Inspection Report.”																																										

<div>Site Characteristic (Independent Variable)</div>	<div>Minimum Depth to Underlying Groundwater</div> <div>Value and Number of Landfills</div> <div>Continuous</div>				
<div>Environmental Performance</div>	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results</div> <div>Kruskal-Wallis Analysis of Variance</div> <table><thead><tr><th>Independent Variable Category</th><th>Probability</th></tr></thead><tbody><tr><td>Minimum Depth to Underlying Groundwater</td><td>0.573</td></tr></tbody></table> <div><div><div>Log-Scale Frequency Diagram of Depth to Water by Gas Inspection Report Category</div></div><div><div>Box-and-Whisker Plot of Depth to Water by Gas Inspection Report Category</div></div></div>	Independent Variable Category	Probability	Minimum Depth to Underlying Groundwater	0.573
Independent Variable Category	Probability				
Minimum Depth to Underlying Groundwater	0.573				
<div>Variable Type for Statistical Analysis</div>	<div>Continuous Independent Variable</div>				
<div>Results Statement</div>	<div>There is not a statistically significant difference in depth to water whether a site is in the category “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report.”</div>				

Site Characteristic (Independent Variable)	<h2>Underlying Geologic Material</h2> <p>Value and Number of Landfills</p> <p>Sand and/or Gravel: 95 Silts/Clays: 62 Sedimentary Rock: 51 Igneous Rock: 16</p>																														
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</p> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>Sand and/or Gravel</td><td>0.910</td><td>0.941</td><td>2.734</td><td>0.324</td></tr><tr><td>Sedimentary Rock</td><td>Sand and/or Gravel</td><td>0.075</td><td>1.874</td><td>3.745</td><td>0.938</td></tr><tr><td>Silts/Clays</td><td>Sand and/or Gravel</td><td>0.561</td><td>1.209</td><td>2.296</td><td>0.637</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Igneous Rock	Sand and/or Gravel	0.910	0.941	2.734	0.324	Sedimentary Rock	Sand and/or Gravel	0.075	1.874	3.745	0.938	Silts/Clays	Sand and/or Gravel	0.561	1.209	2.296	0.637					
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																									
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Silts/Clays	Sand and/or Gravel	0.561	1.209	2.296	0.637																										
<div><div><h3>Number of Sites in Each Gas Inspection Report Category by Underlying Geologic Material</h3><table><caption>Data for Number of Sites</caption><thead><tr><th>Underlying Geologic Material</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>7</td><td>9</td></tr><tr><td>Sand and/or Gravel</td><td>43</td><td>52</td></tr><tr><td>Sedimentary Rock</td><td>31</td><td>20</td></tr><tr><td>Silts/Clays</td><td>31</td><td>31</td></tr></tbody></table></div><div><h3>Percent of Sites in Each Gas Inspection Report Category by Underlying Geologic Material</h3><table><caption>Data for Percent of Sites</caption><thead><tr><th>Underlying Geologic Material</th><th>Has Gas Inspection Report (%)</th><th>Does Not Have Gas Inspection Report (%)</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>8</td><td>6</td></tr><tr><td>Sand and/or Gravel</td><td>46</td><td>38</td></tr><tr><td>Sedimentary Rock</td><td>28</td><td>18</td></tr><tr><td>Silts/Clays</td><td>28</td><td>28</td></tr></tbody></table></div></div>		Underlying Geologic Material	Has Gas Inspection Report	Does Not Have Gas Inspection Report	Igneous Rock	7	9	Sand and/or Gravel	43	52	Sedimentary Rock	31	20	Silts/Clays	31	31	Underlying Geologic Material	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)	Igneous Rock	8	6	Sand and/or Gravel	46	38	Sedimentary Rock	28	18	Silts/Clays	28	28
Underlying Geologic Material	Has Gas Inspection Report	Does Not Have Gas Inspection Report																													
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Sedimentary Rock	28	18																													
Silts/Clays	28	28																													
Variable Type for Statistical Analysis	Categorical Independent Variable																														
Results Statement	At a 95 percent significance level, the underlying geologic material does not increase or decrease the likelihood that a site is in the category “Has Gas Inspection Report.” Under a lower significance level, such as 90 percent, results indicate it is approximately 1.9 times more likely that a sedimentary rock site is in the category “Has Gas Inspection Report” than a sand and/or gravel site.																														

Site Characteristic (Independent Variable)	Average Annual Precipitation Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Annual Precipitation</td><td>0.239</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p style="text-align: center;">Log-Scale Frequency Diagram of Average Annual Precipitation by Gas Inspection Report Category</p>  <p style="text-align: center;">Average Annual Precipitation (inches)</p> </div> <div> <p style="text-align: center;">Box-and-Whisker Plot of Average Annual Precipitation by Gas Inspection Report Category</p>  <p style="text-align: center;">Has Gas Inspection Report</p> </div> </div>	Independent Variable Category	Probability	Annual Precipitation	0.239
Independent Variable Category	Probability				
Annual Precipitation	0.239				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is no statistically significant difference in average annual precipitation, whether a site is in the category “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report.”				

Site Characteristic (Independent Variable)	<div>Landfill Gas Collection System</div> <div>Value and Number of Landfills</div> <div>Yes: 103</div> <div>No: 121</div>																														
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Yes (has landfill gas monitoring)</td><td>No (does not have landfill gas monitoring)</td><td>0.0025</td><td>3.128</td><td>5.756</td><td>1.700</td></tr></tbody></table> <div><div><div>Number of Sites in Each Gas Inspection Report Category by Landfill Gas Collection System</div><table><caption>Data for Number of Sites in Each Gas Inspection Report Category by Landfill Gas Collection System</caption><thead><tr><th>Landfill Gas Collection System</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>No</td><td>42</td><td>79</td></tr><tr><td>Yes</td><td>70</td><td>33</td></tr></tbody></table></div><div><div>Percent of Sites in Each Gas Inspection Report Category by Landfill Gas Collection System</div><table><caption>Data for Percent of Sites in Each Gas Inspection Report Category by Landfill Gas Collection System</caption><thead><tr><th>Landfill Gas Collection System</th><th>Has Gas Inspection Report (%)</th><th>Does Not Have Gas Inspection Report (%)</th></tr></thead><tbody><tr><td>No</td><td>38</td><td>71</td></tr><tr><td>Yes</td><td>63</td><td>29</td></tr></tbody></table></div></div>	Independent Variable Category	Reference Value	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Yes (has landfill gas monitoring)	No (does not have landfill gas monitoring)	0.0025	3.128	5.756	1.700	Landfill Gas Collection System	Has Gas Inspection Report	Does Not Have Gas Inspection Report	No	42	79	Yes	70	33	Landfill Gas Collection System	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)	No	38	71	Yes	63	29
Independent Variable Category	Reference Value	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																										
Yes (has landfill gas monitoring)	No (does not have landfill gas monitoring)	0.0025	3.128	5.756	1.700																										
Landfill Gas Collection System	Has Gas Inspection Report	Does Not Have Gas Inspection Report																													
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Landfill Gas Collection System	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)																													
No	38	71																													
Yes	63	29																													
Variable Type for Statistical Analysis	Dichotomous Independent Variable																														
Results Statement	It is approximately 3.1 times more likely that sites with landfill gas collection systems are in the category “Has Gas Inspection Report” than those that do not have landfill gas collection systems.																														

Site Characteristic (Independent Variable)	Landfill Size (Permitted Disposal Area) Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Permitted Disposal Area</td><td>0.01049</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p style="text-align: center;">Log-Scale Frequency Diagram of Permitted Disposal Area by Gas Inspection Report Category</p>  </div> <div> <p style="text-align: center;">Box-and-Whisker Plot of Permitted Disposal Area by Gas Inspection Report Category</p>  </div> </div>	Independent Variable Category	Probability	Permitted Disposal Area	0.01049
Independent Variable Category	Probability				
Permitted Disposal Area	0.01049				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	The permitted disposal area is statistically different (in this case, greater) for those sites in the category “Has Gas Inspection Report.”				

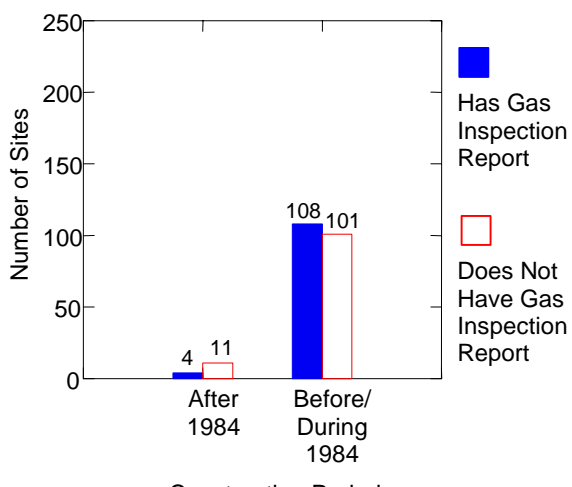
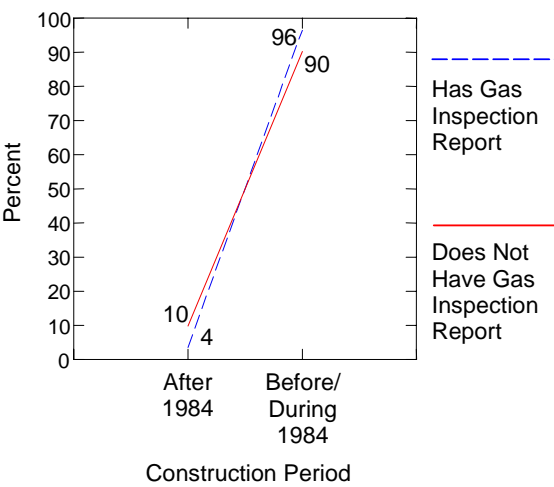
<div>Site Characteristic (Independent Variable)</div>	<div>Liner Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Subtitle D* or Subtitle D Alternative: 4</div> <div>Fully Lined, Partially Non-Subtitle D or Non-Subtitle D Alternative: 12</div> <div>Partially Unlined: 70</div> <div>Fully Unlined: 138</div> <div>*Also referred to as “Sub-D.”</div>																								
<div>Environmental Performance</div>	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Sub-D or Sub-D Alternative</td><td>Fully Unlined</td><td>0.979</td><td>0.976</td><td>6.032</td><td>0.158</td></tr><tr><td>Fully Lined, Partially Non-Sub-D or Non-Sub-D-Alternative</td><td>Fully Unlined</td><td>0.240</td><td>2.05</td><td>6.785</td><td>0.619</td></tr><tr><td>Partially Unlined</td><td>Fully Unlined</td><td>0.00025</td><td>3.128</td><td>5.756</td><td>1.700</td></tr></table>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Sub-D or Sub-D Alternative	Fully Unlined	0.979	0.976	6.032	0.158	Fully Lined, Partially Non-Sub-D or Non-Sub-D-Alternative	Fully Unlined	0.240	2.05	6.785	0.619	Partially Unlined	Fully Unlined	0.00025	3.128	5.756	1.700
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																				
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Partially Unlined	Fully Unlined	0.00025	3.128	5.756	1.700																				
	<div><div><div>Number of Sites in Each Gas Inspection Report Category by Liner Type</div><div><table><thead><tr><th>Liner Type</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>Completely Sub-D or Sub-D Alternative</td><td>2</td><td>2</td></tr><tr><td>Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative</td><td>7</td><td>5</td></tr><tr><td>Partially Unlined</td><td>56</td><td>82</td></tr></tbody></table></div></div><div><div>Percent of Sites in Each Gas Inspection Report Category by Liner Type</div><div><table><thead><tr><th>Liner Type</th><th>Has Gas Inspection Report (%)</th><th>Does Not Have Gas Inspection Report (%)</th></tr></thead><tbody><tr><td>Completely Sub-D or Sub-D Alternative</td><td>3</td><td>2</td></tr><tr><td>Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative</td><td>6</td><td>4</td></tr><tr><td>Partially Unlined</td><td>73</td><td>20</td></tr></tbody></table></div></div></div>	Liner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report	Completely Sub-D or Sub-D Alternative	2	2	Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative	7	5	Partially Unlined	56	82	Liner Type	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)	Completely Sub-D or Sub-D Alternative	3	2	Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative	6	4	Partially Unlined	73	20
Liner Type	Has Gas Inspection Report	Does Not Have Gas Inspection Report																							
Completely Sub-D or Sub-D Alternative	2	2																							
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Liner Type	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)																							
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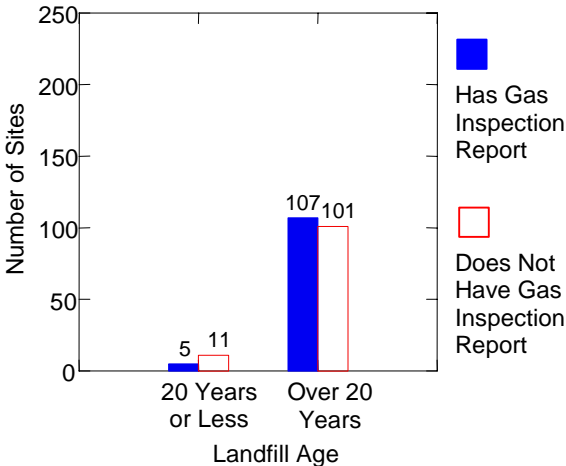
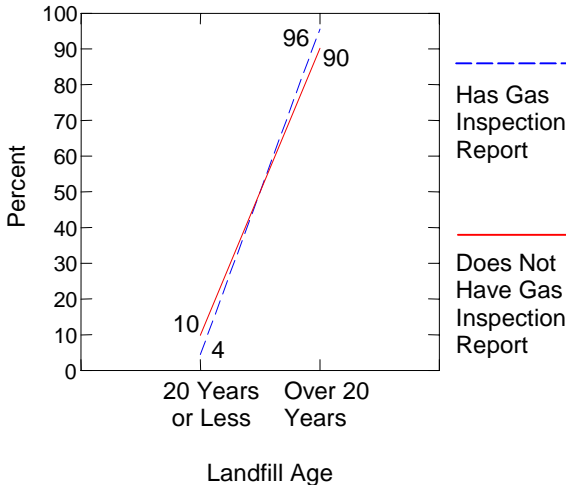
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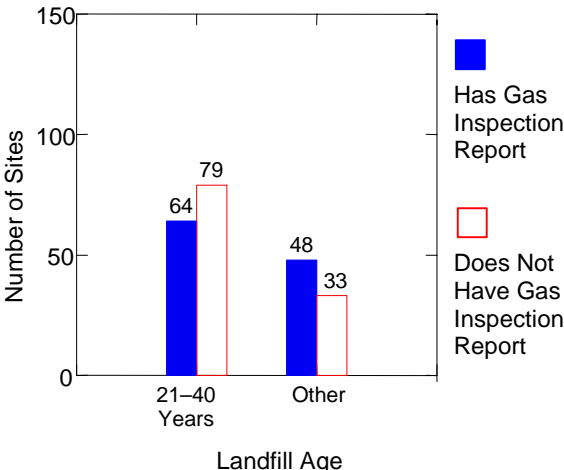
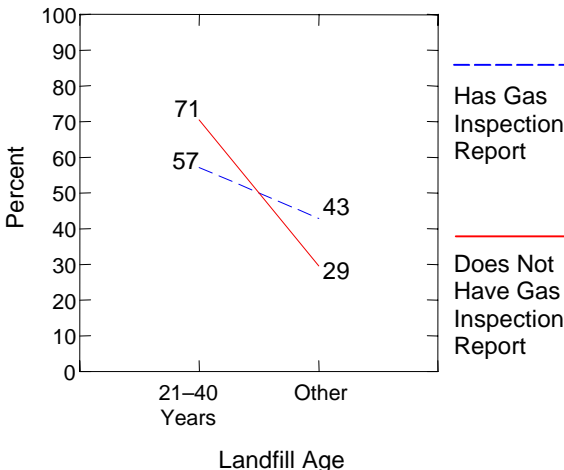
Variable Type for Statistical Analysis	Categorical Independent Variable
Results Statement	A partially unlined site is approximately 3.1 times more likely to be in the category “Has Gas Inspection Report” than a fully unlined site. No other liner category increases or decreases the likelihood that a site is in the category “Has Gas Inspection Report” relative to fully unlined sites.

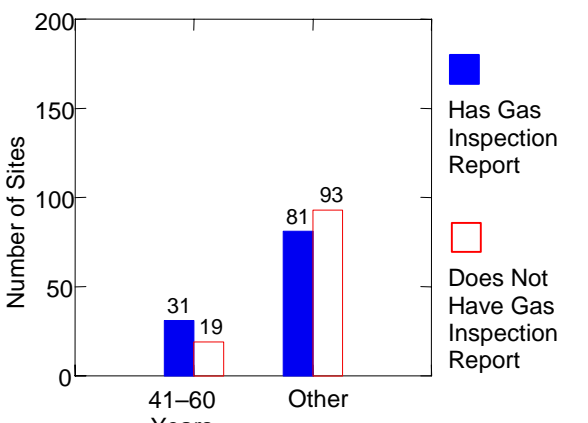
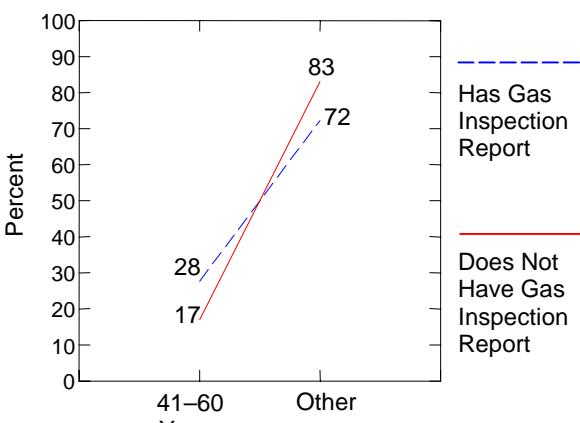
Site Characteristic (Independent Variable)	<div>Cover Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Covered: 48</div> <div>Partially Uncovered: 30</div> <div>Completely Uncovered: 146</div>																			
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Covered</td><td>Fully Uncovered</td><td>0.154</td><td>0.623</td><td>1.195</td><td>0.325</td></tr><tr><td>Partially Uncovered</td><td>Fully Uncovered</td><td>0.471</td><td>1.359</td><td>3.126</td><td>0.591</td></tr></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Covered	Fully Uncovered	0.154	0.623	1.195	0.325	Partially Uncovered	Fully Uncovered	0.471	1.359	3.126	0.591
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio														
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Partially Uncovered	Fully Uncovered	0.471	1.359	3.126	0.591															
<div>Number of Sites in Each Gas Inspection Report Category by Cover Type</div> <div></div> <div>Line Plot of Percent of Sites in Each Gas Inspection Report Category by Cover Type</div> <div></div>																				
Variable Type for Statistical Analysis	Categorical Independent Variable																			
Results Statement	The cover type does not increase or decrease the likelihood that a site is in the category “Has Gas Inspection Report.”																			

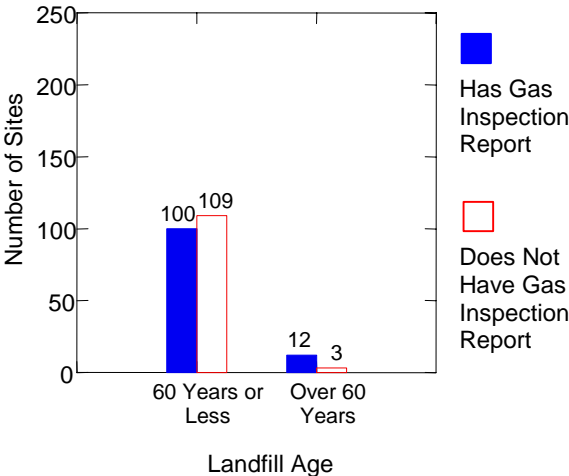
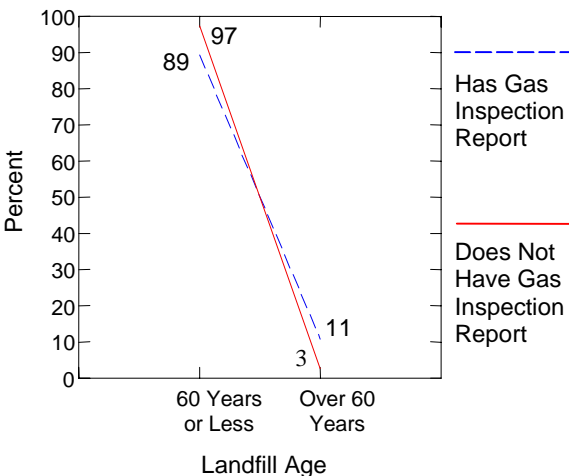
Site Characteristic (Independent Variable)	Landfill Age Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Landfill Age</td><td>0.0007</td></tr> </tbody> </table> <div> <div> <p>Number of Sites in Each Gas Inspection Report Category by Construction Period</p> </div> <div> <p>Line Plot of Percent of Sites In Each Gas Inspection Report Category by Construction Period</p> </div> </div>	Independent Variable Category	Probability	Landfill Age	0.0007
Independent Variable Category	Probability				
Landfill Age	0.0007				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	Landfill age is statistically different (in this case, greater) for those sites in the category “Has Gas Inspection Report.”				

Site Characteristic (Independent Variable)	<h1>Landfill Age (Construction Before/During 1984 or After 1984)</h1> <p>Value and Number of Landfills</p> <p>Construction before/during 1984: 209</p> <p>Construction after 1984: 15</p>																															
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Has Gas Inspection Report”)</p> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Construction after 1984</td><td>Construction before/during 1984</td><td>0.072</td><td>2.941</td><td>9.533</td><td>0.907</td></tr></table> <div><div><h3>Number of Sites in Each Gas Inspection Report Category by Construction Period</h3><table><caption>Data for Number of Sites in Each Gas Inspection Report Category by Construction Period</caption><thead><tr><th>Construction Period</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>After 1984</td><td>4</td><td>11</td></tr><tr><td>Before/ During 1984</td><td>108</td><td>101</td></tr></tbody></table></div><div><h3>Line Plot of Percent of Sites In Each Gas Inspection Report Category by Construction Period</h3><table><caption>Data for Line Plot of Percent of Sites In Each Gas Inspection Report Category by Construction Period</caption><thead><tr><th>Construction Period</th><th>Has Gas Inspection Report (%)</th><th>Does Not Have Gas Inspection Report (%)</th></tr></thead><tbody><tr><td>After 1984</td><td>10</td><td>4</td></tr><tr><td>Before/ During 1984</td><td>96</td><td>90</td></tr></tbody></table></div></div>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Construction after 1984	Construction before/during 1984	0.072	2.941	9.533	0.907	Construction Period	Has Gas Inspection Report	Does Not Have Gas Inspection Report	After 1984	4	11	Before/ During 1984	108	101	Construction Period	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)	After 1984	10	4	Before/ During 1984	96	90
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																											
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Construction Period	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)																														
After 1984	10	4																														
Before/ During 1984	96	90																														
Variable Type for Statistical Analysis	Dichotomous Independent Variable																															
Results Statement	At a 95 percent significance level, whether a site was built before/during 1984 or after 1984 does not increase or decrease the likelihood of its being in the category “Has Gas Inspection Report.” Under a 90 percent significance level, results indicate it is approximately 2.9 times less likely that a site constructed after 1984 is in the category “Has Gas Inspection Report” than a site built before or during 1984.																															

Site Characteristic (Independent Variable)	<div>Landfill Age (20 Years or Less)</div> <div>Value and Number of Landfills</div> <div>Age of site less than or equal to 20 years: 16</div> <div>Age of site greater than 20 years: 208</div>													
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill age 20 years or less</td><td>Age of site greater than 20 years</td><td>0.1287</td><td>0.429</td><td>1.278</td><td>0.144</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill age 20 years or less	Age of site greater than 20 years	0.1287	0.429	1.278	0.144
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio								
	Landfill age 20 years or less	Age of site greater than 20 years	0.1287	0.429	1.278	0.144								
<div><div><div>Number of Sites in Each Gas Inspection Report Category by Landfill Age (20 Years or Less)</div><div></div></div><div><div>Percent of Sites in Each Gas Inspection Report Category by Landfill Age (20 Years or Less)</div><div></div></div></div>														
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	Whether or not a site is 20 years old or less does not increase or decrease the likelihood that it is in the category “Has Gas Inspection Report.”													

Site Characteristic (Independent Variable)	<div>Landfill Age (21–40 Years)</div> <div>Value and Number of Landfills</div> <div>Age of site 21–40 years: 143</div> <div>Other: 81</div>													
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill age 21–40 years</td><td>Other</td><td>0.0378</td><td>1.795</td><td>3.119</td><td>1.033</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill age 21–40 years	Other	0.0378	1.795	3.119	1.033
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio								
	Landfill age 21–40 years	Other	0.0378	1.795	3.119	1.033								
<div><div><div>Number of Sites in Each Gas Inspection Report Category by Landfill Age (21–40 Years)</div></div><div><div>Percent of Sites Within Each Gas Inspection Report Category by Landfill Age (21–40 Years)</div></div></div>														
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	A site between 21 and 40 years old is approximately 1.8 times less likely to be in the category “Has Gas Inspection Report” than are other sites.													

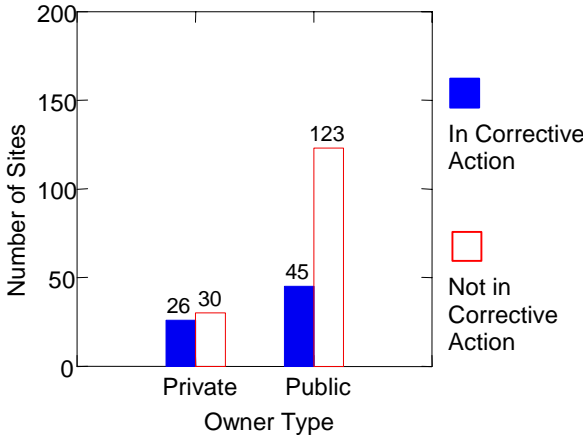
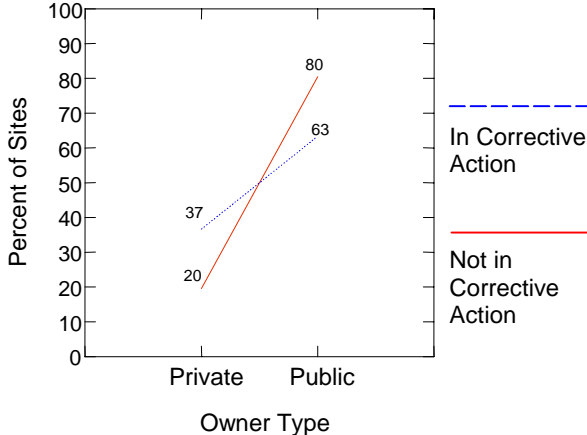
Site Characteristic (Independent Variable)	<div>Landfill Age (41–60 Years)</div> <div>Value and Number of Landfills</div> <div>Age of site 41–60 years: 50</div> <div>Other: 174</div>												
Environmental Performance	<div>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</div> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Landfill age 41–60 years</td><td>Other</td><td>0.0561</td><td>1.873</td><td>3.567</td><td>0.984</td></tr></tbody></table>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill age 41–60 years	Other	0.0561	1.873	3.567	0.984
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio							
	Landfill age 41–60 years	Other	0.0561	1.873	3.567	0.984							
<div><div><div>Number of Sites in Each Gas Inspection Report Category by Landfill Age</div><div>Landfill Age (41–60 Years) (41–60 Years)</div></div><div><div>Percent of Sites Within Each Gas Inspection Report Category by Landfill Age</div><div>Landfill Age (41–60 Years) (41–60 Years)</div></div></div>													
Variable Type for Statistical Analysis	Dichotomous Independent Variable												
Results Statement	At a 95 percent significance level, whether a site is between 41 and 60 years old does not increase or decrease the likelihood of its being in the category “Has Gas Inspection Report.” Under a 90 percent significance level, results indicate that a site between 41 and 60 years old is approximately 1.9 times more likely to be in the category “Has Gas Inspection Report” than other sites.												

Site Characteristic (Independent Variable)	<h2>Landfill Age (Greater Than 60 Years)</h2> <p>Value and Number of Landfills</p> <p>Age of site greater than 60 years: 15</p> <p>Age of site less than or equal to 60 years: 209</p>																		
Environmental Performance	<p>Dependent Variable: Has Gas Inspection Report (Binary Values: “Has Gas Inspection Report” or “Does Not Have Gas Inspection Report”)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Does Not Have Gas Inspection Report”)</p> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Landfill age greater than 60 years</td><td>Age of site less than or equal to 60 years</td><td>0.026</td><td>4.360</td><td>15.901</td><td>1.195</td></tr></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Landfill age greater than 60 years	Age of site less than or equal to 60 years	0.026	4.360	15.901	1.195					
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio													
	Landfill age greater than 60 years	Age of site less than or equal to 60 years	0.026	4.360	15.901	1.195													
<div><div><p>Number of Sites in Each Gas Inspection Report Category by Landfill Age (Greater Than 60 Years)</p><table><thead><tr><th>Landfill Age</th><th>Has Gas Inspection Report</th><th>Does Not Have Gas Inspection Report</th></tr></thead><tbody><tr><td>60 Years or Less</td><td>100</td><td>109</td></tr><tr><td>Over 60 Years</td><td>12</td><td>3</td></tr></tbody></table></div><div><p>Percent of Sites Within Each Gas Inspection Report Category by Landfill Age (Greater Than 60 years)</p><table><thead><tr><th>Landfill Age</th><th>Has Gas Inspection Report (%)</th><th>Does Not Have Gas Inspection Report (%)</th></tr></thead><tbody><tr><td>60 Years or Less</td><td>89</td><td>97</td></tr><tr><td>Over 60 Years</td><td>3</td><td>11</td></tr></tbody></table></div></div>		Landfill Age	Has Gas Inspection Report	Does Not Have Gas Inspection Report	60 Years or Less	100	109	Over 60 Years	12	3	Landfill Age	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)	60 Years or Less	89	97	Over 60 Years	3	11
Landfill Age	Has Gas Inspection Report	Does Not Have Gas Inspection Report																	
60 Years or Less	100	109																	
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Landfill Age	Has Gas Inspection Report (%)	Does Not Have Gas Inspection Report (%)																	
60 Years or Less	89	97																	
Over 60 Years	3	11																	
Variable Type for Statistical Analysis	Dichotomous Independent Variable																		
Results Statement	A site that is over 60 years old is approximately 4.36 times more likely to be in the category “Has Gas Inspection Report” than other sites.																		

Appendix B-4

Assessment of Individual MSW Landfill Site Characteristics By Corrective Action Status

Results statements in this appendix are based on the study's Task 2 database inventory, which contains data on the 224 MSW landfills studied.

Site Characteristic (Independent Variable)	<div>Owner Type</div> <div>Value and Number of Landfills</div> <div>Public: 168</div> <div>Private: 56</div>																														
Environmental Performance	<div>Dependent Variable: “In Corrective Action” (Binary Values: “In Corrective Action” or “Not in Corrective Action”).</div> <div>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Not in Corrective Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Private</td><td>Public</td><td>0.007</td><td>2.369</td><td>4.432</td><td>1.266</td></tr></table> <div><div><div>Number of Sites in Each Corrective Action Category by Owner Type</div><table><caption>Data for Number of Sites</caption><thead><tr><th>Owner Type</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>Private</td><td>26</td><td>30</td></tr><tr><td>Public</td><td>45</td><td>123</td></tr></tbody></table></div><div><div>Percent of Sites in Each Corrective Action Category by Owner Type</div><table><caption>Data for Percent of Sites</caption><thead><tr><th>Owner Type</th><th>In Corrective Action (%)</th><th>Not in Corrective Action (%)</th></tr></thead><tbody><tr><td>Private</td><td>37</td><td>20</td></tr><tr><td>Public</td><td>63</td><td>80</td></tr></tbody></table></div></div>	Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Private	Public	0.007	2.369	4.432	1.266	Owner Type	In Corrective Action	Not in Corrective Action	Private	26	30	Public	45	123	Owner Type	In Corrective Action (%)	Not in Corrective Action (%)	Private	37	20	Public	63	80
Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																										
Private	Public	0.007	2.369	4.432	1.266																										
Owner Type	In Corrective Action	Not in Corrective Action																													
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Owner Type	In Corrective Action (%)	Not in Corrective Action (%)																													
Private	37	20																													
Public	63	80																													
Variable Type for Statistical Analysis	Categorical Independent Variable																														
Results Statement	Private sites are 2.37 times more likely to be in the category “In Corrective Action” than are public sites.																														

Site Characteristic (Independent Variable)	<h3>Physical Setting</h3> <p>Value and Number of Landfills</p> <p>Inland: 119 Desert: 58 Coastal: 17 Alpine: 13 High Desert: 9 Estuarine: 8</p>																																									
Environmental Performance	<p>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “In Corrective Action”)</p> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>High Desert</td><td>Inland</td><td>0.117</td><td>5.408</td><td>44.649</td><td>0.655</td></tr><tr><td>Desert</td><td>Inland</td><td>0.001</td><td>3.681</td><td>8.188</td><td>1.655</td></tr><tr><td>Alpine</td><td>Inland</td><td>0.235</td><td>2.254</td><td>8.616</td><td>0.589</td></tr><tr><td>Coastal</td><td>Inland</td><td>0.599</td><td>0.761</td><td>2.11</td><td>0.274</td></tr><tr><td>Estuarine</td><td>Inland</td><td>0.399</td><td>2.028</td><td>10.473</td><td>0.393</td></tr></table>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	High Desert	Inland	0.117	5.408	44.649	0.655	Desert	Inland	0.001	3.681	8.188	1.655	Alpine	Inland	0.235	2.254	8.616	0.589	Coastal	Inland	0.599	0.761	2.11	0.274	Estuarine	Inland	0.399	2.028	10.473	0.393					
	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																																				
	High Desert	Inland	0.117	5.408	44.649	0.655																																				
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Alpine	Inland	0.235	2.254	8.616	0.589																																					
Coastal	Inland	0.599	0.761	2.11	0.274																																					
Estuarine	Inland	0.399	2.028	10.473	0.393																																					
<div><div><h4>Number of Sites in Each Corrective Action Category by Physical Setting</h4><table><thead><tr><th>Physical Setting</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>Alpine</td><td>3</td><td>10</td></tr><tr><td>Coastal</td><td>8</td><td>9</td></tr><tr><td>Desert</td><td>9</td><td>49</td></tr><tr><td>Estuarine</td><td>2</td><td>6</td></tr><tr><td>High Desert</td><td>1</td><td>8</td></tr><tr><td>Inland</td><td>48</td><td>71</td></tr></tbody></table></div><div><h4>Percent of Sites in Each Corrective Action Category by Physical Setting</h4><table><thead><tr><th>Physical Setting</th><th>In Corrective Action (%)</th><th>Not in Corrective Action (%)</th></tr></thead><tbody><tr><td>Alpine</td><td>4</td><td>7</td></tr><tr><td>Coastal</td><td>6</td><td>11</td></tr><tr><td>Desert</td><td>13</td><td>32</td></tr><tr><td>Estuarine</td><td>3</td><td>4</td></tr><tr><td>High Desert</td><td>5</td><td>1</td></tr><tr><td>Inland</td><td>68</td><td>46</td></tr></tbody></table></div></div>	Physical Setting	In Corrective Action	Not in Corrective Action	Alpine	3	10	Coastal	8	9	Desert	9	49	Estuarine	2	6	High Desert	1	8	Inland	48	71	Physical Setting	In Corrective Action (%)	Not in Corrective Action (%)	Alpine	4	7	Coastal	6	11	Desert	13	32	Estuarine	3	4	High Desert	5	1	Inland	68	46
Physical Setting	In Corrective Action	Not in Corrective Action																																								
Alpine	3	10																																								
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Coastal	6	11																																								
Desert	13	32																																								
Estuarine	3	4																																								
High Desert	5	1																																								
Inland	68	46																																								
Variable Type for Statistical Analysis	Categorical Independent Variable																																									
Results Statement	Desert sites are 3.68 times less likely to be in the category “In Corrective Action” than inland sites. No other physical settings increase or decrease the likelihood of a site’s being in the category “In Corrective Action”.																																									

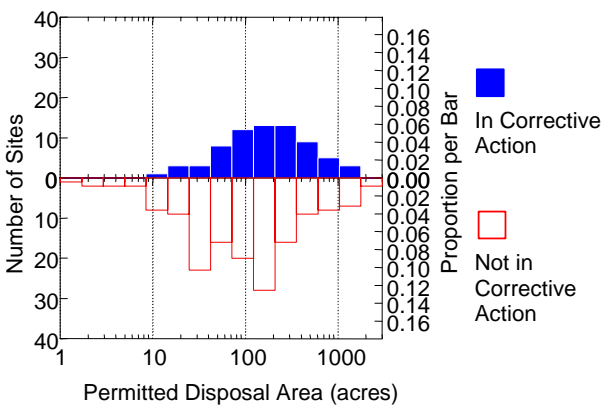
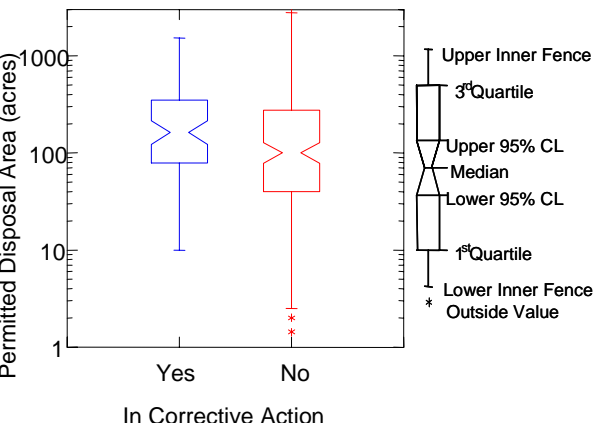
Site Characteristic (Independent Variable)	<div>Social Setting</div> <div>Value and Number of Landfills</div> <div>Rural: 139</div> <div>Urban: 71</div> <div>Suburban: 14</div>																			
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Urban</td><td>Inland</td><td>0.00002</td><td>3.791</td><td>7.002</td><td>2.053</td></tr><tr><td>Suburban</td><td>Inland</td><td>0.940</td><td>0.950</td><td>3.620</td><td>0.250</td></tr></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Urban	Inland	0.00002	3.791	7.002	2.053	Suburban	Inland	0.940	0.950	3.620	0.250
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio															
Urban	Inland	0.00002	3.791	7.002	2.053															
Suburban	Inland	0.940	0.950	3.620	0.250															
	<div>Number of Sites in Each Corrective Action Category by Social Setting</div>	<div>Percent of Sites in Each Corrective Action Category by Social Setting</div>																		
Variable Type for Statistical Analysis	Categorical Independent Variable																			
Results Statement	Urban sites are 3.97 times more likely to be in the category “In Corrective Action” than rural sites. The suburban category does not increase or decrease the likelihood that a site is in the category “In Corrective Action.”																			

Site Characteristic (Independent Variable)	Minimum Depth to Underlying Groundwater Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Minimum Depth to Underlying Groundwater</td><td>0.136</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p>Log-Scale Frequency Diagram of Depth to Water by Corrective Action Status</p> </div> <div> <p>Box-and-Whisker Plot of Depth to Water by Corrective Action Status</p> </div> </div>	Independent Variable Category	Probability	Minimum Depth to Underlying Groundwater	0.136
Independent Variable Category	Probability				
Minimum Depth to Underlying Groundwater	0.136				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	There is no statistically significant difference in the depth to water between sites in the category “In Corrective Action” and those in the category “Not In Corrective Action.”				

Site Characteristic (Independent Variable)	<h2>Underlying Geologic Material</h2> <p>Value and Number of Landfills</p> <p>Sand and/or Gravel: 95 Silts/Clays: 62 Sedimentary Rock: 51 Igneous Rock: 16</p>																																																						
Environmental Performance	<p>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</p> <p>Summary Table of Results – Logistic Regression (Reference Dependent Variable: “In Corrective Action”)</p> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Igneous Rock</td><td>Sand and/or Gravel</td><td>0.36307</td><td>0.57143</td><td>1.90849</td><td>0.17109</td></tr><tr><td>Sedimentary Rock</td><td>Sand and/or Gravel</td><td>0.25349</td><td>0.64865</td><td>1.36356</td><td>0.30856</td></tr><tr><td>Silts/Clays</td><td>Sand and/or Gravel</td><td>0.3127</td><td>0.7013</td><td>1.39657</td><td>0.35216</td></tr></table> <div><div><h3>Number of Sites in Each Corrective Action Category by Underlying Geologic Material</h3><table><caption>Data for Number of Sites in Each Corrective Action Category</caption><thead><tr><th>Underlying Geologic Material</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>4</td><td>12</td></tr><tr><td>Sand and/or Gravel</td><td>35</td><td>60</td></tr><tr><td>Sedimentary</td><td>14</td><td>37</td></tr><tr><td>Silts/Clays</td><td>18</td><td>44</td></tr></tbody></table></div><div><h3>Percent of Sites in Each Corrective Action Category by Underlying Geologic Material</h3><table><caption>Data for Percent of Sites in Each Corrective Action Category</caption><thead><tr><th>Underlying Geologic Material</th><th>In Corrective Action (%)</th><th>Not in Corrective Action (%)</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>8</td><td>6</td></tr><tr><td>Sand and/or Gravel</td><td>49</td><td>39</td></tr><tr><td>Sedimentary</td><td>20</td><td>24</td></tr><tr><td>Silts/Clays</td><td>25</td><td>29</td></tr></tbody></table></div></div>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Igneous Rock	Sand and/or Gravel	0.36307	0.57143	1.90849	0.17109	Sedimentary Rock	Sand and/or Gravel	0.25349	0.64865	1.36356	0.30856	Silts/Clays	Sand and/or Gravel	0.3127	0.7013	1.39657	0.35216	Underlying Geologic Material	In Corrective Action	Not in Corrective Action	Igneous Rock	4	12	Sand and/or Gravel	35	60	Sedimentary	14	37	Silts/Clays	18	44	Underlying Geologic Material	In Corrective Action (%)	Not in Corrective Action (%)	Igneous Rock	8	6	Sand and/or Gravel	49	39	Sedimentary	20	24	Silts/Clays	25	29
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																																																		
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Variable Type for Statistical Analysis	Categorical Independent Variable																																																						
Results Statement	Underlying geologic material does not increase or decrease the likelihood that a site is in the category “In Corrective Action”.																																																						

Site Characteristic (Independent Variable)	<div>Average Annual Precipitation</div> <div>Value and Number of Landfills</div> <div>Continuous</div>					
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results (Kruskal-Wallis Analysis of Variance)</div> <table><tr><th>Independent Variable Category</th><th>Probability</th></tr><tr><td>Average Annual Precipitation</td><td>0.033</td></tr></table>		Independent Variable Category	Probability	Average Annual Precipitation	0.033
	Independent Variable Category	Probability				
	Average Annual Precipitation	0.033				
<div><div><div>Log-Scale Frequency Diagram of Average Annual Precipitation by Corrective Action Status</div></div><div><div>Box-and-Whisker Plot of Average Annual Precipitation by Corrective Action Status</div></div></div>						
Variable Type for Statistical Analysis	Continuous Independent Variable					
Results Statement	The average annual precipitation is statistically different (in this case greater) for sites in the category “In Corrective Action” than for sites in the category “Not In Corrective Action.”					

Site Characteristic (Independent Variable)	<div>Landfill Gas Collection System</div> <div>Value and Number of Landfills</div> <div>Yes: 103</div> <div>No: 121</div>													
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Yes (have landfill gas monitoring)</td><td>No (do not have landfill gas monitoring)</td><td>0.0000</td><td>5.474</td><td>10.213</td><td>2.934</td></tr></table>		Independent Variable Category	Reference Value	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Yes (have landfill gas monitoring)	No (do not have landfill gas monitoring)	0.0000	5.474	10.213	2.934
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	Yes (have landfill gas monitoring)	No (do not have landfill gas monitoring)	0.0000	5.474	10.213	2.934								
<div><div><div>Number of Sites in Each Corrective Monitoring Category by Landfill Gas Collection System</div></div><div><div>Percent of Sites in Each Category by Landfill Gas Collection System</div></div></div>														
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	Sites that have landfill gas collection systems are 5.47 times more likely to be in the category “In Corrective Action” than those that do not have landfill gas collection systems.													

Site Characteristic (Independent Variable)	Landfill Size (Permitted Disposal Area) Value and Number of Landfills Continuous				
Environmental Performance	<p>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</p> <p style="text-align: center;">Summary Table of Results (Kruskal-Wallis Analysis of Variance)</p> <table border="1"> <thead> <tr> <th>Independent Variable Category</th><th>Probability</th></tr> </thead> <tbody> <tr> <td>Permitted Disposal Area</td><td>0.007</td></tr> </tbody> </table> <div style="display: flex; justify-content: space-around;"> <div> <p>Log-Scale Frequency Diagram of Permitted Disposal Area by Corrective Action Status</p>  </div> <div> <p>Box-and-Whisker Plot of Permitted Disposal Area by Corrective Action Status</p>  </div> </div>	Independent Variable Category	Probability	Permitted Disposal Area	0.007
Independent Variable Category	Probability				
Permitted Disposal Area	0.007				
Variable Type for Statistical Analysis	Continuous Independent Variable				
Results Statement	The permitted landfill area is statistically different (in this case greater) for sites in the category “In Corrective Action” than for sites in the category “Not In Corrective Action.”				

Site Characteristic (Independent Variable)	Liner Type (Whole Site) Value and Number of Landfills Completely Subtitle* D or Subtitle D Alternative: 4 Fully Lined – Partially Non-Subtitle D or Non-Subtitle D Alternative: 12 Partially Unlined: 70 Fully Unlined: 138 *Also referred to as “Sub-D.”																								
Environmental Performance	Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”) Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Not in Corrective Action”) <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Sub-D or Sub-D alternative</td><td>Fully Unlined</td><td>0.840</td><td>0.795</td><td>7.368</td><td>0.086</td></tr><tr><td>Fully lined – partially non-Sub-D or non-Sub-D alternative</td><td>Fully Unlined</td><td>0.184</td><td>2.273</td><td>7.640</td><td>0.676</td></tr><tr><td>Partially Unlined</td><td>Fully Unlined</td><td>0.001</td><td>2.752</td><td>5.084</td><td>1.489</td></tr></table>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Sub-D or Sub-D alternative	Fully Unlined	0.840	0.795	7.368	0.086	Fully lined – partially non-Sub-D or non-Sub-D alternative	Fully Unlined	0.184	2.273	7.640	0.676	Partially Unlined	Fully Unlined	0.001	2.752	5.084	1.489
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																				
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	<p>Number of Sites in Each Corrective Action Category by Liner Type</p> <table border="1"> <thead> <tr> <th>Liner Type</th> <th>In Corrective Action</th> <th>Not in Corrective Action</th> </tr> </thead> <tbody> <tr> <td>Fully Lined Sub-D or Alternative</td> <td>1</td> <td>3</td> </tr> <tr> <td>Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative</td> <td>5</td> <td>7</td> </tr> <tr> <td>Fully Unlined</td> <td>33</td> <td>105</td> </tr> <tr> <td>Partially Unlined</td> <td>32</td> <td>38</td> </tr> </tbody> </table>	Liner Type	In Corrective Action	Not in Corrective Action	Fully Lined Sub-D or Alternative	1	3	Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative	5	7	Fully Unlined	33	105	Partially Unlined	32	38	<p>Percent of Sites in Each Corrective Action Category by Liner Type</p> <table border="1"> <thead> <tr> <th>Liner Type</th> <th>In Corrective Action</th> <th>Not in Corrective Action</th> </tr> </thead> <tbody> <tr> <td>Fully Lined Sub-D or Alt</td> <td>1</td> <td>3</td> </tr> <tr> <td>Fully Lined-Partially Non Sub-D or Alt</td> <td>7</td> <td>5</td> </tr> <tr> <td>Fully Unlined</td> <td>46</td> <td>69</td> </tr> <tr> <td>Partially Unlined</td> <td>45</td> <td>24</td> </tr> </tbody> </table>	Liner Type	In Corrective Action	Not in Corrective Action	Fully Lined Sub-D or Alt	1	3	Fully Lined-Partially Non Sub-D or Alt	7	5	Fully Unlined	46	69	Partially Unlined	45	24
Liner Type	In Corrective Action	Not in Corrective Action																														
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Partially Unlined	45	24																														
Variable Type for Statistical Analysis	Categorical Independent Variable																															
Results Statement	Partially unlined sites are 2.75 times more likely to be in the category “In Corrective Action” than fully unlined sites. No other liner category increases or decreases the likelihood that a site is in the category “In Corrective Action” relative to fully unlined sites.																															

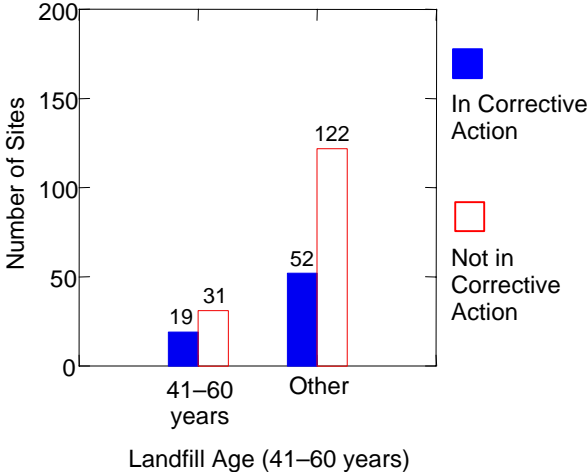
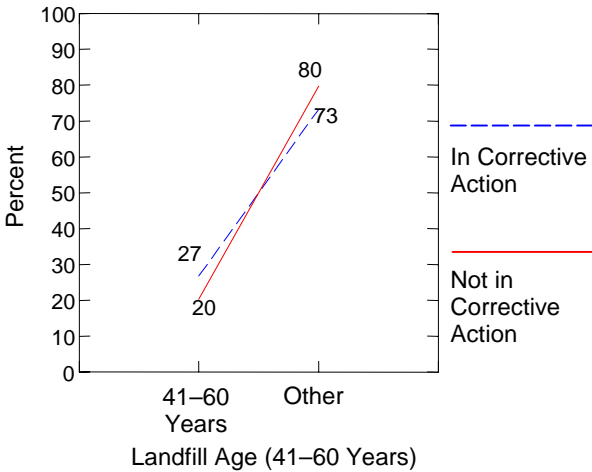
Site Characteristic (Independent Variable)	<div>Cover Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Covered: 48</div> <div>Partially Uncovered: 30</div> <div>Completely Uncovered: 146</div>																		
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Completely Covered</td><td>Fully Uncovered</td><td>0.182</td><td>1.585</td><td>3.11</td><td>0.807</td></tr><tr><td>Partially Uncovered</td><td>Fully Uncovered</td><td>0.184</td><td>1.777</td><td>4.151</td><td>0.761</td></tr></table> <div><div><div>Number of Sites in Each Corrective Action Category by Cover Type</div></div><div><div>Percent of Sites in Each Corrective Action Category by Cover Type</div></div></div>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Completely Covered	Fully Uncovered	0.182	1.585	3.11	0.807	Partially Uncovered	Fully Uncovered	0.184	1.777	4.151	0.761
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Partially Uncovered	Fully Uncovered	0.184	1.777	4.151	0.761														
Variable Type for Statistical Analysis	Categorical Independent Variable																		
Results Statement	Cover type does not increase or decrease the likelihood that a site is in the category “In Corrective Action.”																		

Site Characteristic (Independent Variable)	<div>Landfill Age</div> <div>Value and Number of Landfills</div> <div>Continuous</div>					
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results (Kruskal-Wallis Analysis of Variance)</div> <table><tr><th>Independent Variable Category</th><th>Probability</th></tr><tr><td>Age of Site</td><td>0.253</td></tr></table>		Independent Variable Category	Probability	Age of Site	0.253
Independent Variable Category	Probability					
Age of Site	0.253					
	<div>Log-Scale Frequency Diagram of Landfill Age by Corrective Action Status</div>	<div>Box-and-Whisker Plot of Landfill Age by Monitoring Status</div>				
Variable Type for Statistical Analysis	Continuous Independent Variable					
Results Statement	There is no statistically significant difference between the ages of sites in the category “In Corrective Action” and those in the category “Not In Corrective Action.”					

Site Characteristic (Independent Variable)	Landfill Age (Construction Before/During 1984 or After 1984) Value and Number of Landfills Construction date before/during 1984: 209 Construction after 1984: 15																		
Environmental Performance	Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”) Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Not in Corrective Action”)																		
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Construction Period	In Corrective Action	Not in Corrective Action																	
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Construction Period	In Corrective Action (%)	Not in Corrective Action (%)																	
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Variable Type for Statistical Analysis	Dichotomous Independent Variable																		
Results Statement	Whether a site was built before/during 1984 or after 1984 does not increase or decrease the likelihood that it is in the category “In Corrective Action.”																		

Site Characteristic (Independent Variable)	Landfill Age (20 Years or Less) Value and Number of Landfills Age of site 20 years or less: 16 Age of site greater than 20 years: 208																			
Environmental Performance	Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)																			
	Summary Table of Results – Logistic Regression (Reference Dependent Variable: “Not in Corrective Action”)																			
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Landfill Age	In Corrective Action	Not in Corrective Action																		
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20 or Less	8	6																		
Over 20	94	92																		
Variable Type for Statistical Analysis	Dichotomous Independent Variable																			
Results Statement	Whether or not a site is 20 years old or less does not increase or decrease the likelihood of its being in the category “In Corrective Action.”																			

Site Characteristic (Independent Variable)	<div>Landfill Age (21–40 Years)</div> <div>Value and Number of Landfills</div> <div>Age of site 21–40 years: 143</div> <div>Other: 81</div>													
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Age of site 21–40 years</td><td>Other</td><td>0.4873</td><td>0.814</td><td>1.455</td><td>0.455</td></tr></tbody></table>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Age of site 21–40 years	Other	0.4873	0.814	1.455	0.455
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<div><div><div>Number of Sites in Each Corrective Action Category by Landfill Age (21–40 Years)</div></div><div><div>Percent of Sites in Each Corrective Action Category by Landfill Age (21–40 Years)</div></div></div>														
Variable Type for Statistical Analysis	Dichotomous Independent Variable													
Results Statement	Whether or not a site is 21–0 years old does not increase or decrease the likelihood of its being in the category “In Corrective Action.”													

Site Characteristic (Independent Variable)	<div>Landfill Age (41–60 Years)</div> <div>Value and Number of Landfills</div> <div>Age of site 41-60–years: 50</div> <div>Other: 174</div>																														
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds-Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr><tr><td>Age of site 41–60 years</td><td>Other</td><td>0.278</td><td>1.438</td><td>2.773</td><td>0.746</td></tr></table> <div><div><div>Number of Sites in Each Corrective Action Category by Landfill Age (41–60 Years)</div><table><thead><tr><th>Landfill Age (41–60 years)</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>41–60 years</td><td>19</td><td>31</td></tr><tr><td>Other</td><td>52</td><td>122</td></tr></tbody></table></div><div><div>Percent of Sites in Each Monitoring Status Category Landfill Age (41–60 Years)</div><table><thead><tr><th>Landfill Age (41–60 Years)</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>41–60 Years</td><td>27</td><td>20</td></tr><tr><td>Other</td><td>80</td><td>73</td></tr></tbody></table></div></div>	Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Age of site 41–60 years	Other	0.278	1.438	2.773	0.746	Landfill Age (41–60 years)	In Corrective Action	Not in Corrective Action	41–60 years	19	31	Other	52	122	Landfill Age (41–60 Years)	In Corrective Action	Not in Corrective Action	41–60 Years	27	20	Other	80	73
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds-Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																										
Age of site 41–60 years	Other	0.278	1.438	2.773	0.746																										
Landfill Age (41–60 years)	In Corrective Action	Not in Corrective Action																													
41–60 years	19	31																													
Other	52	122																													
Landfill Age (41–60 Years)	In Corrective Action	Not in Corrective Action																													
41–60 Years	27	20																													
Other	80	73																													
Variable Type for Statistical Analysis	Dichotomous Independent Variable																														
Results Statement	Whether a site is between 41 and 60 years old does not increase or decrease the likelihood that it is “In Corrective Action.”																														

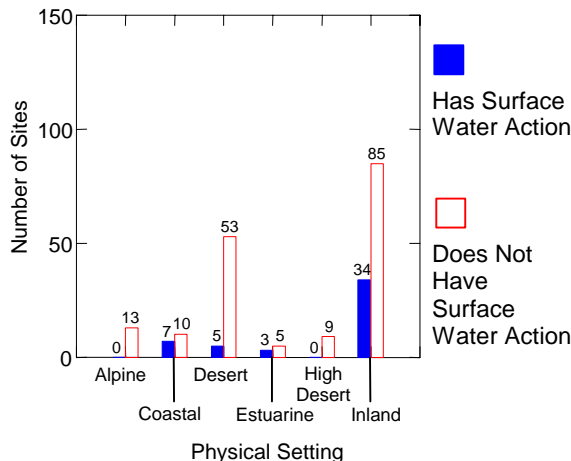
Site Characteristic (Independent Variable)	<div>Landfill Age (Greater Than 60 Years)</div> <div>Value and Number of Landfills</div> <div>Age of site greater than 60 years: 15</div> <div>Age of site less than or equal to 60 years: 209</div>																															
Environmental Performance	<div>Dependent Variable: In Corrective Action (Binary Values: “In Corrective Action” or “Not in Corrective Action”)</div> <div>Summary Table of Results – Logistic Regression</div> <div>(Reference Dependent Variable: “Not in Corrective Action”)</div> <table><thead><tr><th>Independent Variable Category</th><th>Reference Value for Independent Variable</th><th>Probability</th><th>Odds Ratio</th><th>Upper 95% Bound on Odds Ratio</th><th>Lower 95% Bound on Odds Ratio</th></tr></thead><tbody><tr><td>Age of site greater than 60 years</td><td>Age of site less than/equal to 60 years</td><td>0.8879</td><td>1.083</td><td>3.295</td><td>0.356</td></tr></tbody></table> <div><div><div>Number of Sites in Each Corrective Action Category by Landfill Age (Greater Than 60 Years)</div><table><thead><tr><th>Landfill Age (Over 60 Years)</th><th>In Corrective Action</th><th>Not in Corrective Action</th></tr></thead><tbody><tr><td>60 years or less</td><td>66</td><td>143</td></tr><tr><td>Over 60 years</td><td>5</td><td>10</td></tr></tbody></table></div><div><div>Percent of Sites Within Each Monitoring Status Category by Landfill (Greater Than 60 Years)</div><table><thead><tr><th>Landfill Age (Greater Than 60 Years)</th><th>In Corrective Action (%)</th><th>Not in Corrective Action (%)</th></tr></thead><tbody><tr><td>60 Years or Less</td><td>93</td><td>93</td></tr><tr><td>Over 60 Years</td><td>7</td><td>7</td></tr></tbody></table></div></div>		Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio	Age of site greater than 60 years	Age of site less than/equal to 60 years	0.8879	1.083	3.295	0.356	Landfill Age (Over 60 Years)	In Corrective Action	Not in Corrective Action	60 years or less	66	143	Over 60 years	5	10	Landfill Age (Greater Than 60 Years)	In Corrective Action (%)	Not in Corrective Action (%)	60 Years or Less	93	93	Over 60 Years	7	7
Independent Variable Category	Reference Value for Independent Variable	Probability	Odds Ratio	Upper 95% Bound on Odds Ratio	Lower 95% Bound on Odds Ratio																											
Age of site greater than 60 years	Age of site less than/equal to 60 years	0.8879	1.083	3.295	0.356																											
Landfill Age (Over 60 Years)	In Corrective Action	Not in Corrective Action																														
60 years or less	66	143																														
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Landfill Age (Greater Than 60 Years)	In Corrective Action (%)	Not in Corrective Action (%)																														
60 Years or Less	93	93																														
Over 60 Years	7	7																														
Variable Type for Statistical Analysis	Dichotomous Independent Variable																															
Results Statement	Whether or not a site is over 60 years old does not increase or decrease the likelihood of its being in the category “In Corrective Action.”																															

Appendix B-5:

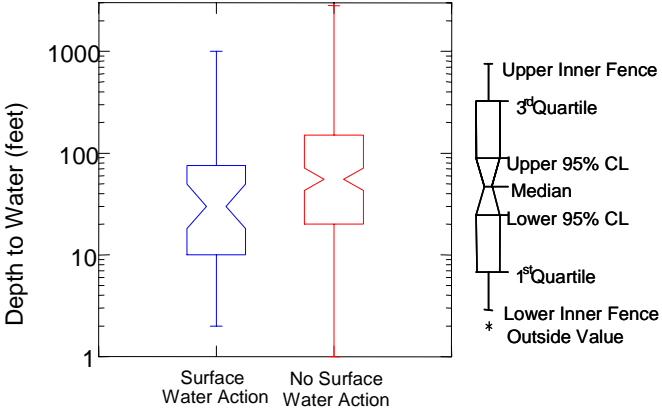
Assessment of Individual MSW Landfill Site Characteristics by Surface Water Action

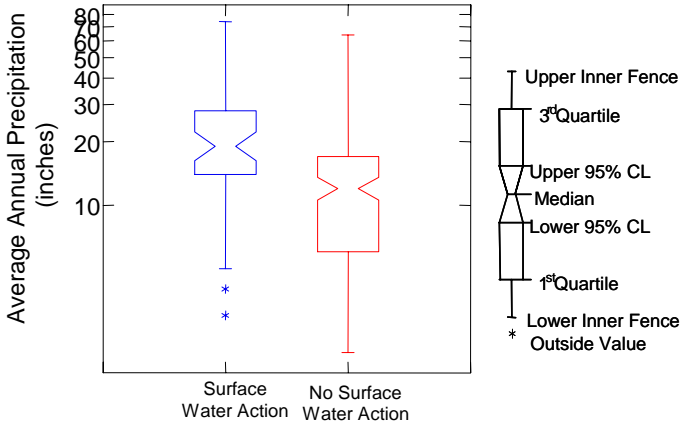
Summary of significant results from analysis of correlation between landfill site characteristics and surface water performance. See Section 4.1.5 for discussion.

Results statements in this appendix are based on the study's Task 2 database inventory, which contains data on the 224 MSW landfills studied.

Site Characteristic (Independent Variable)	<h3>Physical Setting</h3> <p>Value and Number of Landfills</p> <p>Inland: 119 Desert: 58 Coastal: 17 Alpine: 13 High Desert: 9 Estuarine: 8</p>																				
Environmental Performance	<p>Dependent Variable: Has Surface Water Action (Binary Values: “Has Surface Water Action” or “Does Not Have Surface Water Action”)</p>																				
	<p>Number of Sites in Each Surface Water Action Category by Physical Setting</p>  <table><thead><tr><th>Physical Setting</th><th>Has Surface Water Action</th><th>Does Not Have Surface Water Action</th></tr></thead><tbody><tr><td>Alpine</td><td>0</td><td>13</td></tr><tr><td>Coastal</td><td>7</td><td>10</td></tr><tr><td>Desert</td><td>5</td><td>53</td></tr><tr><td>Estuarine</td><td>3</td><td>5</td></tr><tr><td>High Desert</td><td>0</td><td>9</td></tr><tr><td>Inland</td><td>34</td><td>85</td></tr></tbody></table>	Physical Setting	Has Surface Water Action	Does Not Have Surface Water Action	Alpine	0	13	Coastal	7	10	Desert	5	53	Estuarine	3	5	High Desert	0	9	Inland	34
Physical Setting	Has Surface Water Action	Does Not Have Surface Water Action																			
Alpine	0	13																			
Coastal	7	10																			
Desert	5	53																			
Estuarine	3	5																			
High Desert	0	9																			
Inland	34	85																			
Variable Type for Statistical Analysis	Categorical Independent Variable																				
Results Statement	It is approximately 4.2 times less likely that a desert site is in the category “Has Surface Water Action” than an inland site.																				

Site Characteristic (Independent Variable)	<h3>Underlying Geologic Material</h3> <p>Value and Number of Landfills</p> <p>Sand and/or Gravel: 95 Silts/Clays: 62 Sedimentary Rock: 51 Igneous Rock: 16</p>														
Environmental Performance	<p>Dependent Variable: Has Surface Water Action (Binary Values: “Has Surface Water Action” or “Does Not Have Surface Water Action”)</p>														
	<p>Number of Sites in Each Surface Water Action Category by Underlying Geologic Material</p> <table><thead><tr><th>Underlying Geologic Material</th><th>Has Surface Water Action</th><th>Does Not Have Surface Water Action</th></tr></thead><tbody><tr><td>Igneous Rock</td><td>2</td><td>14</td></tr><tr><td>Sand and/or Gravel</td><td>13</td><td>82</td></tr><tr><td>Sedimentary Rock</td><td>14</td><td>37</td></tr><tr><td>Silts/Clays</td><td>20</td><td>42</td></tr></tbody></table>	Underlying Geologic Material	Has Surface Water Action	Does Not Have Surface Water Action	Igneous Rock	2	14	Sand and/or Gravel	13	82	Sedimentary Rock	14	37	Silts/Clays	20
Underlying Geologic Material	Has Surface Water Action	Does Not Have Surface Water Action													
Igneous Rock	2	14													
Sand and/or Gravel	13	82													
Sedimentary Rock	14	37													
Silts/Clays	20	42													
Variable Type for Statistical Analysis	Categorical Independent Variable														
Results Statement	It is approximately 2.4 times more likely that a sedimentary rock site is in the category “Has Surface Water Action” than a sand and/or gravel site, and it is approximately 3 times more likely that a silts/clays site is in the category “Has Surface Water Action” than a sand and/or gravel site.														

Site Characteristic (Independent Variable)	Minimum Depth to Underlying Groundwater Value and Number of Landfills Continuous
Environmental Performance	Dependent Variable: Has Surface Water Action (Binary Values: “Has Surface Water Action” or “Does Not Have Surface Water Action”)
	Box and Whisker Plot of Surface Water Action Category by Minimum Depth to Underlying Groundwater 
Variable Type for Statistical Analysis	Continuous Independent Variable
Results Statement	Minimum depth to underlying groundwater is statistically different (in this case, less) for sites in the category “Has Surface Water Action.”

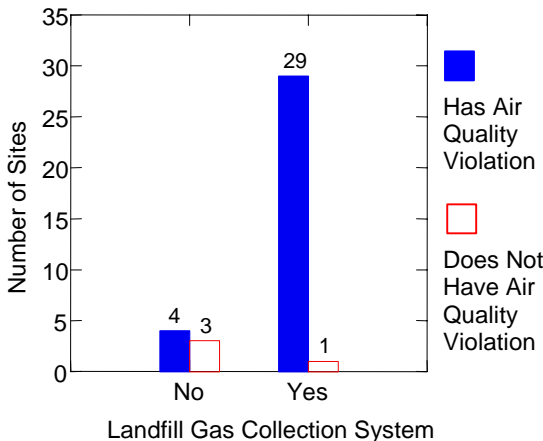
Site Characteristic (Independent Variable)	Average Annual Precipitation Value and Number of Landfills Continuous
Environmental Performance	Dependent Variable: Has Surface Water Action (Binary Values: “Has Surface Water Action” or “Does Not Have Surface Water Action”)
	Box and Whisker Plot of Surface Water Action Category by Average Annual Precipitation 
Variable Type for Statistical Analysis	Continuous Independent Variable
Results Statement	The average annual precipitation is statistically different (in this case, greater) for sites in the category “Has Surface Water Action.”

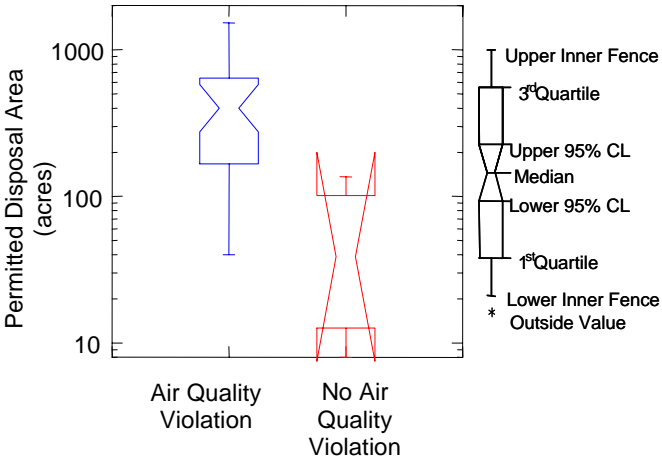
Appendix B-6:

Assessment of Individual MSW Landfill Site Characteristics By Air Quality Violation

Summary of significant results from analysis of correlation between landfill site characteristics and air quality performance for South Coast Air Quality Management District (SCAQMD) and Bay Area Air Quality Management District (BAAQMD). See Sections 4.11.2 and 4.3.2 for discussion.

Results statements in this appendix are based on the study's Task 2 database inventory, which contains data on the 224 MSW landfills studied.

Site Characteristic (Independent Variable)	<div>Landfill Gas Collection System</div> <div>Value and Number of Landfills</div> <div>Yes: 30</div> <div>No: 7</div>								
Environmental Performance	<div>Dependent Variable: Has Air Quality Violation (Binary Values: “Has Air Quality Violation” or “Does Not Have Air Quality Violation”)</div>								
	<div>Number of Sites in Each Air Quality Violation Category by Landfill Gas Collection System</div> <div><table><thead><tr><th>Landfill Gas Collection System</th><th>Has Air Quality Violation</th><th>Does Not Have Air Quality Violation</th></tr></thead><tbody><tr><td>No</td><td>4</td><td>3</td></tr><tr><td>Yes</td><td>29</td><td>1</td></tr></tbody></table></div>	Landfill Gas Collection System	Has Air Quality Violation	Does Not Have Air Quality Violation	No	4	3	Yes	29
Landfill Gas Collection System	Has Air Quality Violation	Does Not Have Air Quality Violation							
No	4	3							
Yes	29	1							
Variable Type for Statistical Analysis	Dichotomous Independent Variable								
Results Statement	It is approximately 22.1 times more likely that sites with landfill gas collection systems are in the category “Has Air Quality Violation” than those that do not have landfill gas collection systems.								

Site Characteristic (Independent Variable)	Landfill Size (Permitted Disposal Area) Value and Number of Landfills Continuous
Environmental Performance	Dependent Variable: Has Air Quality Violation (Binary Values: “Has Air Quality Violation” or “Does Not Have Air Quality Violation”)
	Box and Whisker Plot of Air Quality Violation Category by Permitted Disposal Area 
Variable Type for Statistical Analysis	Continuous Independent Variable
Results Statement	Permitted disposal area is statistically different (in this case, greater) for SCAQMD/BAAQMD sites in the category “Has Air Quality Violation.”

Appendix C-1:

Analysis of Independence—Owner Type

Statistical analysis of data in the inventory shows that private sites are 2.37 times more likely to be in corrective action than public sites.

The correlation between *Owner Type* and “In Corrective Action” implies causation (with *Owner Type* influencing or resulting in whether the site is in corrective action). However, to better understand if the variable *Owner Type* is independent in its correlation with corrective action, the information was further analyzed.

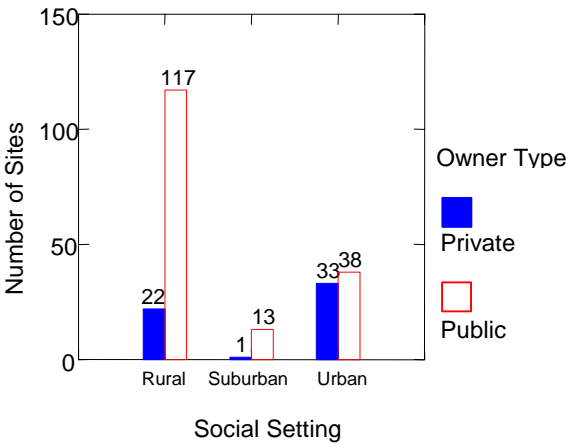
As discussed in Section 3.2.3, it appears that a handful of the landfill site characteristics designated as independent variables are, in fact, related to (and therefore dependent on) one or more other site variables. This potential correlation to other independent variables was examined for the variable *Owner Type* using logistic regression analysis. Complete results and graphical summary of this analysis are provided below.

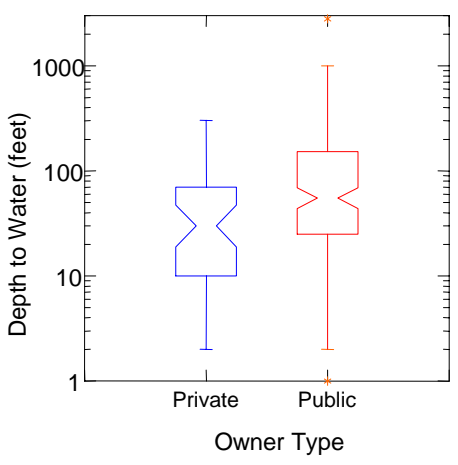
The following statements are based on qualification and analysis of these results:

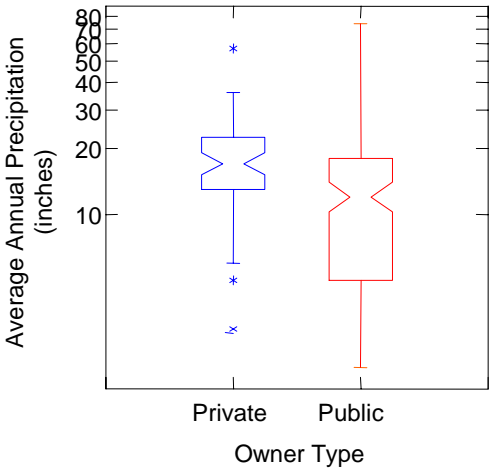
1. There appears to be some relationship between the estuarine physical setting and private ownership. However, this is not relevant to the single-factor analyses, since no significant correlation was found between the estuarine physical setting and any of the environmental factors.
2. The correlation between private ownership and the status “In Corrective Action” noted in Section 4.1.2 may to varying degrees be due to the relationship between *Owner Type* and one or more of the following site characteristics: *Social Setting*, *Landfill Gas Collection System*, *Liner Type*, *Landfill Size (Permitted Disposal Area)* and *Average Annual Precipitation*. The latter five variables also exhibited a positive correlation with the status “In Corrective Action” and with *Owner Type*.

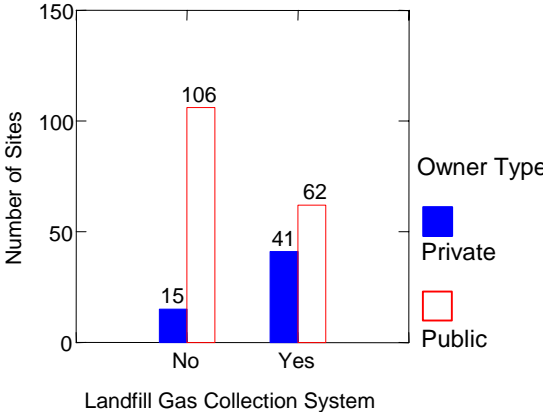
The analysis of the variable *Owner Type* indicates that, based on the available data, the following independent variables are correlated to whether a site is private or public:

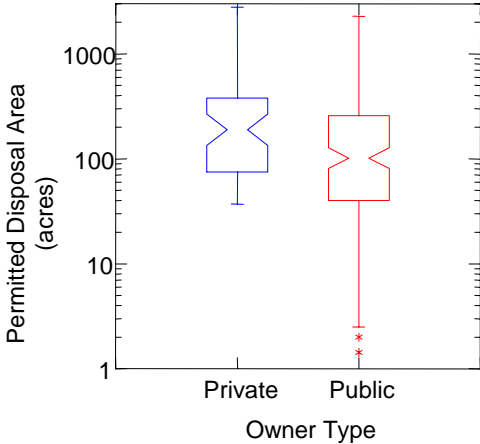
Site Characteristic (Independent Variable)	<div>Physical Setting</div> <div>Value and Number of Landfills</div> <div>Inland: 119 Desert: 58 Coastal: 17 Alpine: 13 High Desert: 9 Estuarine: 8</div>																				
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)																				
	<div>Number of Sites in Each Owner Type Category by Physical Setting</div> <div><table><thead><tr><th>Physical Setting</th><th>Private</th><th>Public</th></tr></thead><tbody><tr><td>Alpine</td><td>3</td><td>10</td></tr><tr><td>Coastal</td><td>4</td><td>13</td></tr><tr><td>Desert</td><td>6</td><td>52</td></tr><tr><td>Estuarine</td><td>6</td><td>2</td></tr><tr><td>High Desert</td><td>0</td><td>9</td></tr><tr><td>Inland</td><td>37</td><td>82</td></tr></tbody></table></div>	Physical Setting	Private	Public	Alpine	3	10	Coastal	4	13	Desert	6	52	Estuarine	6	2	High Desert	0	9	Inland	37
Physical Setting	Private	Public																			
Alpine	3	10																			
Coastal	4	13																			
Desert	6	52																			
Estuarine	6	2																			
High Desert	0	9																			
Inland	37	82																			
Variable Type for Statistical Analysis	Categorical Independent Variable																				
Results Statement	Desert sites are approximately 3.9 times less likely to be privately owned than inland sites, and estuarine sites are approximately 6.6 times more likely to be privately owned than inland sites.																				

Site Characteristic (Independent Variable)	Social Setting Value and Number of Landfills Rural: 139 Urban: 71 Suburban: 14											
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)											
	Number of Sites in Each Owner Type Category by Social Setting  <table><thead><tr><th>Social Setting</th><th>Private</th><th>Public</th></tr></thead><tbody><tr><td>Rural</td><td>22</td><td>117</td></tr><tr><td>Suburban</td><td>1</td><td>13</td></tr><tr><td>Urban</td><td>33</td><td>38</td></tr></tbody></table>	Social Setting	Private	Public	Rural	22	117	Suburban	1	13	Urban	33
Social Setting	Private	Public										
Rural	22	117										
Suburban	1	13										
Urban	33	38										
Variable Type for Statistical Analysis	Categorical Independent Variable											
Results Statement	Urban sites are approximately 4.6 times more likely to be privately owned than rural sites.											

Site Characteristic (Independent Variable)	Minimum Depth to Underlying Groundwater Value and Number of Landfills Continuous
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)
	Box and Whisker Plot of Owner Type Category by Minimum Depth to Underlying Groundwater 
Variable Type for Statistical Analysis	Continuous Independent Variable
Results Statement	Depth to water is statistically different (in this case, less) for private sites.

Site Characteristic (Independent Variable)	Average Annual Precipitation Value and Number of Landfills Continuous
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)
	Box and Whisker Plot of Owner Type Category by Average Annual Precipitation 
Variable Type for Statistical Analysis	Continuous Independent variable
Results Statement	The average annual precipitation is statistically different (in this case, greater) for private sites.

Site Characteristic (Independent Variable)	Landfill Gas Collection System Value and Number of Landfills Yes: 103 No: 121								
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)								
	Number of Sites in Each Owner Type Category by Landfill Gas Collection System  <table><thead><tr><th>Landfill Gas Collection System</th><th>Private</th><th>Public</th></tr></thead><tbody><tr><td>No</td><td>15</td><td>106</td></tr><tr><td>Yes</td><td>41</td><td>62</td></tr></tbody></table>	Landfill Gas Collection System	Private	Public	No	15	106	Yes	41
Landfill Gas Collection System	Private	Public							
No	15	106							
Yes	41	62							
Variable Type for Statistical Analysis	Dichotomous Independent Variable								
Results Statement	Sites that have landfill gas collection systems are approximately 4.7 times more likely to be privately owned than sites without landfill gas collection systems.								

Site Characteristic (Independent Variable)	Landfill Size (Permitted Disposal Area) Value and Number of Landfills Continuous
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)
	Box-and-Whisker Plot Owner Type Category by Permitted Disposal Area  <p>The figure is a box-and-whisker plot comparing the permitted disposal area (in acres) for two owner types: Private and Public. The y-axis is on a logarithmic scale from 1 to 1000. The Private group (blue) has a median around 150 acres, with a box from approximately 80 to 400 acres and whiskers extending from 50 to 2000 acres. The Public group (red) has a median around 100 acres, with a box from approximately 50 to 250 acres and whiskers extending from 10 to 2000 acres. Two outliers for the Public group are marked with red asterisks at approximately 2 acres.</p>
Variable Type for Statistical Analysis	Continuous
Results Statement	The permitted landfill area is statistically different (in this case, greater) for privately owned sites.

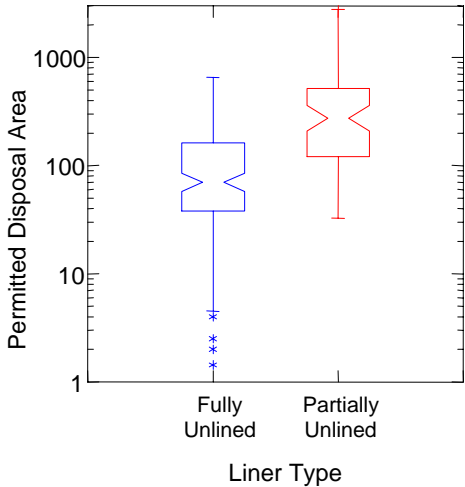
Site Characteristic (Independent Variable)	<div>Liner Type (Whole Site)</div> <div>Value and Number of Landfills</div> <div>Completely Subtitle* D or Subtitle D Alternative: 4</div> <div>Fully Lined – Partially Non-Subtitle D or Non-Subtitle D Alternative: 12</div> <div>Partially Unlined: 70</div> <div>Fully Unlined: 138</div> <div>*Also referred to as “Sub-D.”</div>														
Analysis of Independence	Dependent Variable: Owner Type (Binary Values: “Private” or “Public”)														
	<div>Number of Sites in Each Owner Type Category by Liner Type</div> <div></div> <table><thead><tr><th>Liner Type</th><th>Private</th><th>Public</th></tr></thead><tbody><tr><td>Fully Lined Sub-D or Sub-D Alternative</td><td>4</td><td>0</td></tr><tr><td>Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative</td><td>4</td><td>8</td></tr><tr><td>Fully Unlined</td><td>19</td><td>119</td></tr><tr><td>Partially Unlined</td><td>29</td><td>41</td></tr></tbody></table>	Liner Type	Private	Public	Fully Lined Sub-D or Sub-D Alternative	4	0	Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative	4	8	Fully Unlined	19	119	Partially Unlined	29
Liner Type	Private	Public													
Fully Lined Sub-D or Sub-D Alternative	4	0													
Fully Lined, Partially Non-Sub-D or Non-Sub-D Alternative	4	8													
Fully Unlined	19	119													
Partially Unlined	29	41													
Variable Type for Statistical Analysis	Categorical Independent Variable														
Results Statement	Completely Subtitle D or Subtitle D-alternative sites are approximately 25.1 times more likely to be privately owned than fully unlined sites, and partially unlined sites are approximately 4.5 times more likely to be privately owned than fully unlined sites.														

Appendix C-2:

Analysis of Independence—Liner Type (Whole Site)

As noted in Section 4.9.2, partially unlined sites appear to be more likely to be in non-compliance with the respective environmental standards, whereas fully unlined sites do not exhibit such correlation. One suggested explanation for this outcome is that partially unlined sites tend to be large and relatively complex, thereby increasing the likelihood of non-compliance with certain standards. In the examples discussed in Section 4.9.2, non-compliance appears to be associated with larger sites, as defined by the variable *Permit Area*.

An analysis of possible dependence between *Liner Type* and *Permit Area* was conducted, looking specifically at the difference between partially unlined and fully unlined sites. The results, included in this appendix, provide some support to the hypothesis that landfill size may influence whether certain liner types are more or less likely to be in non-compliance.

Site Characteristic (Independent Variable)	Liner Type (Whole Site) Value and Number of Landfills Partially Unlined: 70 Fully Unlined: 138
Analysis of Independence	Dependent Variable: Liner Type (Binary Values: Fully Unlined, Partially Unlined)
	Box –Whisker Plot of Permitted Disposal Area By Liner Type (Whole Site) 
Variable Type for Statistical Analysis	Continuous Independent Variable
Results Statement	Based on the available data, the permitted landfill area for Partially Unlined sites is statistically different (in this case, greater) than Fully Unlined sites.

Appendix D-1: Additional Analyses—Two-Factor Landfill Site Characteristics Census

DRAFT—For Discussion Purposes Only. Do not cite or quote.

Number and percentage of whole sites designated in the database as Rural or Non-Rural, for each independent variable category. See Section 5.2.1 for discussion.

Site Characteristic	Social Setting	Number of Sites	Independent Variable Category	Number of Sites in Independent Variable Category	Percentage Within Independent Variable Category
Owner Type	Rural	139	Private	22	39.3
			Public	117	69.6
	Non-Rural	85	Private	34	60.7
			Public	51	30.4

Average Annual Precipitation	Rural	139	>= 14 in.	58	49.6
			< 14 in.	81	75.7
	Non-Rural	85	>= 14 in.	59	50.4
			< 14 in.	26	24.3

Liner Type	Rural	139	Unlined	106	76.8
			Lined	33	38.4
	Non-Rural	85	Unlined	32	23.2
			Lined	53	61.6

Physical Setting	Rural	110	Desert	50	86.2
			Inland	60	50.4
	Non-Rural	67	Desert	8	13.8
			Inland	59	49.6

DRAFT—For Discussion Purposes Only. Do not cite or quote.

Site Characteristic	Social Setting	Number of Sites	Independent Variable Category	Number of Sites in Independent Variable Category	Percentage Within Independent Variable Category
Minimum Depth to Underlying Groundwater	Rural	139	>= 34.5	77	68.8
			<34.5	62	55.4
	Non-Rural	85	>= 34.5	35	31.3
			<34.5	50	44.6

Landfill Gas Collection System	Rural	139	Yes	37	39.4
			No	102	78.5
	Non-Rural	85	Yes	57	60.6
			No	28	21.5

Landfill Size (Permitted Disposal Area)	Rural	139	>= 122 acres	49	43.4
			< 122 acres	89	80.9
	Non-Rural	85	>= 122 acres	64	56.6
			< 122 acres	21	19.1

Landfill Age	Rural	139	>= 35 years	57	50.4
			< 35 years	82	73.9
	Non-Rural	85	>= 35 years	56	49.6
			< 35 years	29	26.1